# THE

# SCOTS GARDENER

FOR

The CLIMATE of SCOTLAND,

In THREE PARTS:

Treating of the following particulars,

I. Of contrivance and deſign.
I. Of gardens and orchards, &c.
II. Of levelling, meaſuring, and dividing land.
IV. Of cultivating and preparing ground.
V. Of foreſt and fruit trees.
VI. Of gathering and preſerving fruits.

Together with

The GARDENER'S KALENDAR,
The FLORIST'S VADE-MECUM,
The PRACTICAL BEE-MASTER,
OBSERVATIONS on the WEATHER, and
he Earl of Haddington's TREATISE on FOREST-TREES.

Written originally by JOHN REID, Gardener to SIR GEORGE MACKENZIE of ROSEHAUGH, and now carefully corrected, with alterations and additions,

BY

An EMINENT HAND.

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### TO

### The INGENIOUS PLANTERS

### IN

### COTLAND.

DESIRE you to peruſe this book; for
there are may things in it of ſingular
, which I could never find in any, and
ſubſtance of what I could find material,
the practical part of gardenery, improv-
and applied home: whereby I preſume
nay be ſatisfactory to you, when you o-
ate in the choice of huſbandry. Seve-
weighty reaſons induced me hereunto;
The great neceſſity of right contriv-
e, whereby you may do your works
h orderly and cheap: the inexpreſſible
l of incloſing and planting, whereby
may improve your eſtates to the beſt
advantage,

advantage, both for profit and pleaſur
And becauſe the many books on garden
ing are for other countries and climate
and many things in them more ſpeculati
than practical, this enſuing treatiſe ma
prove the more acceptable; altho' obnox
ous to the cenſure of ſevere critics, y
when I reflect on my innocency in the d
ſign thereof, the good of my country,
receive encouragement. And that my e
deavours may prove ſucceſeful, is the ea
neſt deſire of,

JOHN REID.

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The GARDENER's KALENDAR,
Of POT-HERBS, and ſuch as are commonly uſed for DISTILLING,
The FLORIST's *Vade-mecum*, for the propagating, raiſing, planting, increaſing, and preſerving the rareſt FLOWERS and PLANTS,

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# THE

# SCOTS GARDENER.

## PART I.

## OF CONTRIVANCE OR DESIGN.

### CHAP. I.

### How to make the works about a houſe REGULAR and UNIFORM.

### SECT. I.

BY contrivance or deſign, my intention is to prevent the conſequences of inadvertency, or irregular procedure in incloſing and planting.

But as a houſe muſt be built before it is furniſhed, or the ground laid out round it for policy and planting, you may, in the firſt place, take a ſurvey of the plan of a houſe of my invention, fig. 1. It is but little; yet very commodious and cheap. There are only four rooms on a floor, all of which have their entry from the ſtair; yet communicate with one another. The door is in the middle; and there are ten ſteps up to the firſt ſtorey, which comprehends the hall or dining-room, with drawing-room, bed-chamber and waiting-room. You are likewiſe carried down by ten ſteps to the lower ſtorey, which is half under ground and vaulted, where you have kitchen, cellars, larder, &c. The flat above the dining-room may be laid out in bed-

chambers, library and withdrawing-room ; and abov
theſe you may have garrets or wardrobes. You ma
alſo have cloſets within the wall, tho' not demonſtra
ted in the plan. The roof may be divided into three
the middle part flat and covered with lead, and th
two ſides ſloping and ſlated. Without, there is a ſtai
leading down from the hall to a parterre of graſs o
gravel, on whoſe corners are two pavilions, openin
without the line of the houſe, and ſet off in place o
wings ; one of which may be a ſtore-houſe, the othe
a pigeon-houſe. The ſtables, bake and brew houſe ar
moſt conveniently ſituated on the oppoſite ſide, as ſha
be hereafter demonſtrated.

II. Let the ſituation of your houſe be in a health
ſoil, near to a freſh ſpring, defended from the imp
tuous weſt winds, northern colds, and eaſtern blaſt
Make all the buildings and plantings lie ſo about th
houſe, as that the houſe may be the center ; all th
walks, trees and hedges running towards it. Ther
fore whatever you have on the one hand, make a
much, of the ſame form and in the ſame place, on th
other.

III. But if you would go to work regularly, yo
muſt firſt find the central line, by erecting a perpend
cular on the middle of the houſe-front, to extend a
far, both backwards and forwards, as you think r
quiſite for compleating your plan : hence you ma
draw parallels, meaſure and ſtake out your avenue
gardens, *&c.* as you pleaſe ; always minding to me
ſure alike on both ſides of the central line. How to fi
this central line, and to ſet off parallels, is taught i
chap. III. § I. and II.

IV. For further illuſtration of this, ſee the draugh
fig. 2. which, if rightly underſtood, may be appli
to various purpoſes, and improven to great elegance.
In this ſmall ſcale, the houſe is ſituated in the ce

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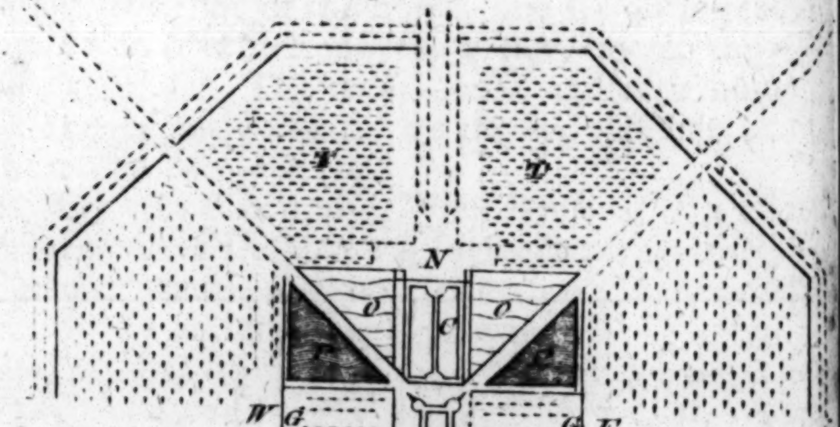
Page 3

Fig. 2.



er, at B. round the houſe are balliſters: the common
venue is N, and ends in a triangle: C is the outer
ourt; and in the two triangular courts marked O, are
laced the office-houſes, with their back part to the
ourt, C, opening without the line of the houſe. The
wo plots P, may be ponds; the two marked G,
herry-gardens; a proper place alſo for raiſing gooſ-
erries, currants and ſtraw-berries. On the ſouth-ſide
f the houſe, there is the pleaſure or flower garden,
lled the Parterre; on each ſide whereof lie the kit-
hen-gardens, marked K; from thence there runs an-
her walk ending in a ſemi-circle, S, which leads out
the lawn or deer park. The viſtas, or walks of proſ-
ct, that run from the four angles of the houſe, are
ry pleaſant and convenient, and afford a good ſhel-
r and protection from rain: for which cauſe there
e two thickets on the north-ſide, marked T; on the
uth-ſide are two ſuch, marked A, for nurſeries; and
eaſt and weſt are two orchards. The whole is envi-
ned with two rows of foreſt-trees without the wall:
e park-wall ſhould be parallel to theſe, that is, e-
ry where equi-diſtant from the houſe as its center;
leaſt the whole an octogon, or near to a regular
lygon, conſiſting of equal ſides and angles. The
lks with their fences, being run forward from all
e four ſides and four angles of the houſe, till they
uch at the middle of each ſide of the park-wall, ſerve
the park for diviſors; which diviſors may be haw-
rn hedges, and theſe in the gardens, holly; but in
e court-entry and office-courts, I think walls requi-
. There ſhould alſo be an aſcent to the houſe, if
ſſible; as, at the firſt court-gate two ſteps; at the
ond, four ſteps, *&c.* But leaving it to every man to
n as his ground and ability will beſt admit, I
ne to ſpeak of regularity, where confined by the ſi-
tion of the ground.

V. As it requires great ingenuity to lay down and execute a regular plan amidſt the confinements of ſituation; it is no leſs difficult to preſcribe rules for ſurmounting theſe obſtacles, there being ſuch a variety o irregular places, which it is hardly poſſible to correct by precepts. Therefore, to what I have ſaid above o the center and central-line, I ſhall only add one ſingle inſtance.

In a confined ſituation of ground, I add what I can but diminiſh nothing: I take a ſurvey of the work and when I find ſeveral regular and irregular things done on one ſide of the houſe, and nothing correſpondent on the other, I mark out the very ſame on th oppoſite ſide: and this I continue to do, till two irregularities produce one uniformity. Or, ſhould an avenue lead obliquely to the houſe, on account of a precipice on the weſt, I immediately view the groun from the top of the houſe, and find that, by turnin my face towards the eaſt, I ſhall have ſtately avenues with gardens on each hand at pleaſure.

But, in order to diſcover and correct the faults the ſituation, it will be neceſſary to make a draught the place upon paper; therefore to aſſiſt you in making your works regular, I ſhall ſhew you in the following chapter:

## CHAP. II.

## How to draw by the SCALE.

### SECT. I.

ALL plans not drawn by the ſcale, are but mere ſuppoſitions and ſtrokes at random. If drawn by the ſcale, they ſtand exactly upon paper as if on the groun Therefore, in contriving your plans, it will be of ſing

r advantage to have an eye to the conſequences of
ll your undertakings, leſt you run inadvertently into
ſnare: for after you have fixed on your deſign, and
erhaps gone a great length in your work; yet in the
ourſe of your procedure, one thing making way for an-
ther, you may chance to hit upon a far better method,
o accompliſh which you muſt overturn moſt or all that
ou have done, and thus run yourſelf into unneceſſary ex-
ence, or, in order to ſave it, muſt ſit down with a diſſatiſ-
ed mind. All theſe inconveniencies may be eaſily and
meouſly prevented by projecting your plans upon paper.

II. You may make as many ſcales as you think ne-
ſſary; ſo that, when you have a plan to draw, you
ay find arithmetically which of theſe ſcales you ought
o draw it by. In the firſt place make a thin broad
le, two foot long, of pear or apple-tree, plumb-tree,
ane-tree, boxwood or braſs, which laſt I prefer.
raw as many lines on both ſides as it will contain.
he diagonal ſcale is the moſt uſeful, as in fig. 3. It
made by dividing the inch into ſo many equal parts,
in 8, 30, 100, 200. By the help of the figure and
ultiplication you can compute the extent of 5 divi-
ons, drawn the length of the ſcale, and 7 in the inch.
he other way is a ſcale of 35 in the inch, which is
by 7, *&c.* If your rule be two foot, you may have
o lengths on it, or as far as your largeſt compaſſes
n conveniently extend. You may likewiſe make ſome
the common ſcales, *i. e.* by dividing the inch in the
dinary way, in a ſtraight line, into ſo many equal
rts, as in fig. 4. ſeeing diagonals are only computed
multiplication.

III. If you are to draw a plan, but know not how
take your meaſures from the ſcale; if you know
e meaſures on the ground, take as many from off
e ſcale with your compaſſes, as you have feet, ells
falls, and extend theſe on the paper. For example,

if you were to draw an orchard, whoſe length is 6
ells, by a ſcale of 200 in the inch, as in the upper pa
of fig. 3. you are firſt to conſider how oft you fin
200 in 680, that you may meaſure ſo many whol
inches with your compaſſes, and the fraction or r
mainder you can take off from the ſubdivided inch.
you fix one foot of the compaſſes at 6, and extend th
other to *a*, theſe ſix half inches amount to 600; an
eight diviſions marked off on the ſubdivided half inc
make 80, both which you may place on the paper an
draw accordingly. Example 2. By the other ſca
containing 100 in the inch, ſhould you incline to mar
the breadth of a walk of 23 foot on paper; as it do
not extend to one inch, you muſt therefore take onl
a certain part of an inch; extend your compaſſes fro
*a*, at the end of the ſubdivided half inch, to *o*, an
you have it; then go to work as before. You may ob
ſerve that the 23 diviſions on the ſcale, is the thr
from twenty forward on the line betwixt 20 and 3
If your draught be ſo large that your compaſſes can
not reach its length, then divide the ſame by 2, 3, o
4, *&c.* take the quotient on your compaſſes, and mar
off ſo many times as your diviſion conſiſted of. Th
is ſo plain that it needs no example.

IV. But if you are to make a draught on one o
more ſheets of paper, then take the length of you
paper in inches; by which divide the length of you
ground, whether in feet, ells, *&c.* and the quotie
will give the ſcale you muſt draw by, *i. e.* an inc
divided into ſo many equal parts. For example, i
you have a plot 360 foot long, which you intend t
draw on a ſheet of common paper of 16 inches: o
not to extend it the whole breadth of the paper, ſu
poſe it 15 inches; 360, the length of the ground, d
vided by 15, the length of the paper, gives 24; ther
fore draw it by a ſcale divided by 24 in the inch. Ex

amp

mple 2. If you deſign to draw a field, the breadth
f which is 864 falls, on the eighth of a ſheet, *viz.* 3
ches; divide 864 by 3, the quotient is 288; but this
eing too ſmall, take one half of it, *viz.* 144, and draw
by that proportion; always remembering, that each
viſion on your paper is two falls on ground.

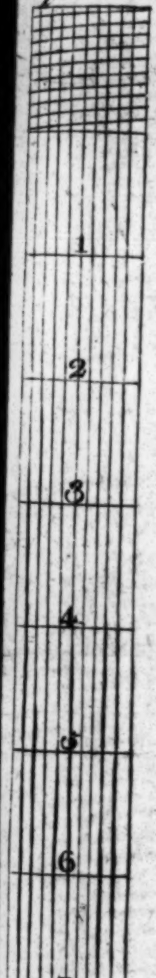
V. Or if you have a draught, and know not by what
ale it was drawn, but know what ground it contains;
e work is, firſt, to meaſure it by a ſuppoſed ſcale;
d, ſecondly, to find a mean proportional betwixt the
ue quantity of acres, and that quantity found by the
ppoſed ſcale; and, thirdly, by the golden rule, ſay,
s the quantity of acres found by the ſuppoſed ſcale,
to the mean proportional; ſo is the ſuppoſed ſcale, to
e true ſcale. For example, if you have a plot of
ound containing 72 acres, and you meaſure it by a
le of 18 falls in the inch, which makes but forty
e half acres; the queſtion is, What ſcale was it drawn
? you will find the mean proportional betwixt 40. 5.
d 72, to be 54, as in Chap. VIII. Sect. VI. and as
. 5. is to 54; ſo is 18, to 24. Thus it appears, that
ſaid plot was drawn by a ſcale of 24 falls in the
h. Example 2. If you have a plot containing 14
es, 64 falls, which, meaſured by a ſcale of 40 in the
h, makes 90 acres, What ſcale was it drawn by?
u will find the mean betwixt 14. 4. and 90, to be 36;
refore as 90, the acres found by the ſuppoſed ſcale,
o 36, the mean proportional; ſo is 40, the ſuppoſ-
ſcale, to 16, the true ſcale. This ſhows, that it
s drawn by a ſcale of 16 in the inch.

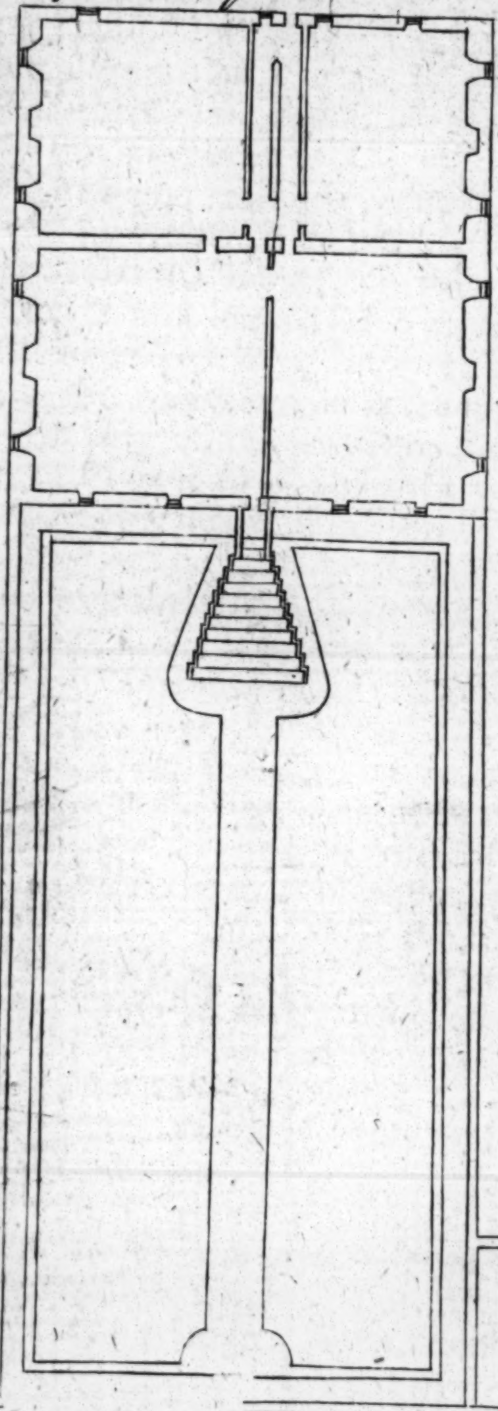
I. But if you have a draught, and know not what
e it was drawn by, nor what ground it contains, ſo
hereby you might find its ſcale, and you deſire to
iniſh or enlarge the ſame on paper, and yet that it
retain the ſame ſhape and proportion in every re-
t; you may divide or multiply every particular
line

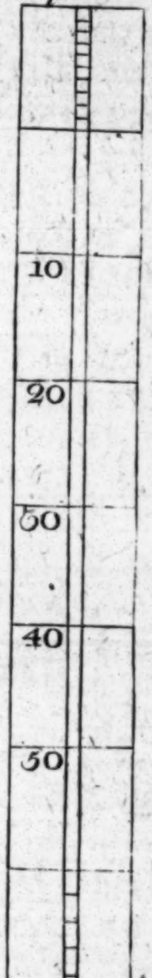
line or part of it, as if you would have it one thi leſs; then divide each part by 3, and mark one of the on the paper. Or if you would have it twice as larg then double every part of it; that is, take the doub of each length and breadth on the compaſſes, and ſet o the paper, and draw accordingly. But if your draug be a map, or the like, draw a ſquare by the outer edg thereof, and divide each ſide into as many equal par as you think fit; betwixt which draw parallel lines a through, croſſing from oppoſite ſides, and notice wh part of your draught falls within the precinct of eac little ſquare, and ſo copy it upon another paper, wheth larger or leſſer; as, if you would have it one fifth le take one fifth of the ſide of one of the little ſquares, an therewith ſquare your clean paper; and likewiſe tak one fifth of length and breadth of each particular wit in each little ſquare, and one fifth of the ſpace th ſuch and ſuch parts, creeks and angles, are diſta from any two of the angles of the ſame; and ſo pla them accordingly in the leſſer little ſquares of yo clean paper.

VII. When you deſign to ſurvey any plot of grou be careful in meaſuring the diſtances truly, and ke an exact account thereof. You may make firſt a ſupp ed figure on paper, before you begin, that there you may write your meaſures as you go along: ſ poſe it to be a hexagon, ſee fig. 27. draw a figure random, containing ſix ſides; and having obſerved meridian on the ground, which you may either find the compaſſes, or let the central line of the houſe, perpendiculars or parallels, ſerve in place thereof; m down ſuch on your ſuppoſed figure: then let the men with the chain begin at any angle; the firſt m have ten ſmall ſticks to thruſt in at every length of chain, and let the laſt man gather them up as he co along; and when all are taken up, let him give th

Fig 3 page 2 Fig 1 Fig 4







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his aſſiſtant to begin again as before, calling that
ie change; ſtill being careful to go ſtraight betwixt
e two ends or extremes: and when you come to
e other end, count how many changes, chains and
ıks; ſuppoſing the hedge c d to be 70 falls, write
ıt down as in the figure, and ſo proceed to the reſt,
ſerving the ſame method.

VIII. But when you meaſure round any plot or
ld, you muſt know how to find the quantity of the
gles, and protract the ſame; for this I ſhall ſhew
u the moſt exact and mechanical method: for ex-
ıple, fig. 21. when you have meaſured the length of
four ſides of this trapezium, as is taught, then mea-
e alſo betwixt any of the two oppoſite angles, as
m *c* to *b*, or from *d* to *a*, and then you may pro-
ct it only with your ſcale, thus; draw a given line
the paper, as *a c*, and from your ſcale take ſo ma-
diviſions as were the length of the hedge, *a c*, and
thereon; and take the length betwixt *c* and *b* on
ır compaſſes; ſet one foot in *c*, and deſcribe an ob-
re arch at *b*; alſo take the length of *a b*, and, ſet-
g one foot in *a*, make another arch to croſs the for-
r at *b*; then draw the line *a b*: likeways take the
gth of the ſide *b d* on the compaſſes; ſet one foot
, deſcribe an obſcure arch at *d*, and take the length
; and, with one foot in *c*, croſs the former at *d*;
n draw *c d* and *b d*, and ſo have you finiſhed. By
ſame rule, it is eaſy to protract fig. 26 and 27, or
other; and this is my method of ſurveying.

X. As for the dimenſions of circles, ſee chap. VIII.
, having the radius, you may eaſily find all things
onging to that operation.

ıs for ſtraight-lined figures, if you reduce them in-
riangles, and meaſure the three ſides of each, you
protract them, as is taught: thus, trigonometry,
he doctrine of plain triangles, ſhews, that having any
three

three things in a triangle, we may find the other thr either by the ſcale, or by artificial ſines, tangents a logarithms ; as having three ſides, or three angles, one angle and two ſides, or two ſides and one ang *&c.* Example, in fig. 20. ſuppoſe you would have t diſtance between B and A. Firſt meaſure off from at any ſide moſt convenient, ſo many ells or fall the more the better: ſuppoſe 384 falls to C, as w appear by a ſcale of 400 in the inch; and in ſetting off, notice what degrees that angle makes by yo protractor; then hold the ſame at C, with its chor line on B C; turn the index, till it point to A; ma what degrees it cuts, ſuppoſe 80, and write them dow here you have the ſide B C 384, the angle A B C 6 and the angle B C A 80, and of conſequence the ang being its complement to 180: therefore go to yo paper, and draw a given line, as A B, then open t compaſſes to the radius of your line of chords, a therewith, ſetting one foot in B, deſcribe the arch D I O; likewiſe take 60 degrees with your compaſſes the line of chords, ſet from D to E on that arch-line, a by the point B and E, draw the line B E C; ſo ſhall t angle A B C contain 60 degrees: but if the angle happ to be more than 90 degrees, then you may take it twice, ſeeing the ordinary line of chords has but 90; if the index had cut 120, firſt take 90 upon the co paſſes, and ſet from D to I then take 30, and ſet from to O, which angle A B O contains 120 degrees. B to return, as you ſet off the angle at B, ſo likewiſe the angle C make an arch, and ſet off 80 degrees ther on, thro' which point at C, draw the line C A; laſtl take the line B A on your compaſſes, *i. e.* betwixt t point B, and the point at A, where the line C A cu the line B A, and apply to the ſame ſcale of 40 in the inch, from whence you took the 384, and yo

wi

find the diſtance betwixt B and A to be 588 falls:

| | |
|---|---|
| the ſine of the angle B A C, f 40 degrees, . . . . . | 9,808,067 |
| o the logarithm of the ſide B C, 84 falls: . . . . . . | 584,331 |
| is the ſine of the angle B C A, f 80 degrees, . . . . . | 9,993,351 |
| e ſum of the 2d and 3d added, . | 10,577,682 |
| e firſt number to be ſubtracted rom this ſum, . . . . . | 9,808,067 |
| the logarithm of the ſide A B, 88 falls, . . . . . . | 769,615 |

f you would know how to find the ſuperficial con- t of any plot of ground, or how to divide the ſame; o lay out any quantity of land in any form what- r, ſee chap. VIII.

# CHAP. III.

## ow to make AVENUES and WALKS.

### SECT. I.

LL walks ſhould front the gates or entries, whether they lead to a houſe, garden, gate, door, k, wood, or high-way. When you have determin- on the end of your walk, in the middle of the ſe-front ſet off a perpendicular to find the central , as obſerved in fig. 2. and for your more exact per- mance, prepare the following inſtrument, *viz.* take ſtraight rules of three or four foot long; join them ſs one another, ſo that the four angles where they may be right angles; at each end of theſe fix a ſtraight piece of wood, of about four or five inche and exactly in the center of each of theſe pieces, ma a ſlit or hole quite thro', and in theſe put a piece ſmall ſilk-thread; place the croſs on the top of t three footed-ſtaff, with a plummet, whereby you m plant it horizontally upon occaſion: on this likew place your protractor, with the box and needle wh you intend to ſurvey ground.

As to the avenue, ſet one ſide of your croſs paral to the given line, the houſe-wall: this you may with great eaſe, by taking one end of it within door, till the ſide touch the door-poſts; and y may alſo view acroſs by the ſide-wall, backſight foreſight, till it ſtand exactly parallel thereto: th turn, and ſtanding within the door, view ſtraight by the ſilk threads, and ſo direct one to drive ſtakes along as far as you can ſee, in a ſtraight and perpen cular line. You may alſo find this perpendicular cen line, tho' walls, hedges, houſes, trees, &c. obſt your view, if you can ſee over them from any wind or off the battlement, if there is any; otherwiſe re to the rules in § III. and IV.

And as by this inſtrument you may raiſe any p pendicular; ſo by the ſame you may let a perpen cular fall: for you may alter it as you pleaſe u the given line, till it direct to the angle or point ſigned.

II. The central line of your avenue being fo out, you muſt place your croſs upon it, and then ſet off half the breadth of it at each ſide; do thi both ends and middle, that they may be exactly rallel, and therein drive ſtakes almoſt to the h And when you come to mark out for the trees, in der to plant them, ſet a ſtraight pole at each dr ſtake for your direction in going ſtraight betwixt th

If the length of the walk be confined, divide it by he diſtance you intend to plant at; and if there be ny odds, add or ſubtract till all the diſtances are eual; which diſtance you muſt take on a chain; for line will ſtretch or ſhrink: begin at one end, and go raight to the other, thruſting in a ſmall ſtake at each ength; minding to let both rows go on parellel to ne another, that is, one on each ſide; ſee the aveues of fig. 2.

And tho' the ground be unequal, yet you muſt hold e chain level; wherefore you muſt have a ſquare nd plumb fixed at your pole or ſtaff, for your more xact performance of the operation.

When you have ſtaked out the ground, prepare the ounding-ſtring, *viz.* a piece of line doubled, and tied ear the point of a ſtick, and ſo put the double on the akes where the trees muſt ſtand; and ſtretching the me, make a ſcratch with the point of the ſtick round, nd, with the ſpade, follow that circle, and dig the ole. See the ſecond part of this treatiſe, where there e directions how to prepare the ground and plant.

If you obſerve theſe directions, having found one ne, you may mark out any kind of walk: I ſhall now ew you how to find one line, whatever obſtruct.

III. And firſt, ſuppoſe you would run a line or walk rough a wood; when you have concluded on the d of it, there erect a perpendicular as above, and n it as far into the wood as you can; then at each e thereof ſet off a parallel line, two or three foot om the central line, or half the breadth of the intend- walk; ſo ſhall you have three parallel lines running in ſtraight lines together. And where any one runs a tree, run forward the other two, and ſet it off ain, as it was, parallel to its fellows; and ſo proceed you paſs thro' the wood or thickets, ſtill marking trees that fall in the interval to be cut down.

A ſecond way is by means of lanthorns with burning candles, in a calm night when dark, hung on ſtakes: while you are ſtanding in the wood, you may plant ſtakes at pleaſure, letting the candles fartheſt from you be higheſt, and removing forward the lights as need requires.

IV. But if both ends of your walk be determined, and you cannot ſee betwixt, by reaſon of hills, woods, houſes, or ſome ſuch obſtruction; in ſuch a caſe let two, having each a pole, go to the center, or to a place betwixt, where they may, by looking backſight and foreſight, perceive the two extremes: there ſhould be a pole with white paper on the ſlip-boards to make them the more conſpicuous: turn your faces towards each other, ſtanding at a large diſtance aſunder, but ſo as you may both ſee your reſpective objects: let A direct B to ſet the pole in a line with his, and that at the north-end; and B direct A to hold in a line with his, and that at the ſouth-end; ſo each directing the other by words or ſigns, let both ſhift to and fro' till they have their deſires at once; then ſhall theſe two and the extremes, be all four in a ſtraight line, whereby you may ſet as many as you pleaſe. This way found out by experiment, and think it worthy a place amongſt the mathematicks.

But if you cannot ſee the two ends, when ſtanding in the middle, although the poles be ever ſo high, then if it be wood or hedges, the foreſaid lanthorns and candles will do the buſineſs.

But if the obſtructions be hills, walls or houſes which intercept your view, ſo as you cannot ſee, e ther by lanthorns, or high poles, though ſtanding in th center, then work by parallels thus; ſet off a paralle line ſo far, as that it may run quite beyond the ob ſtruction, on the ſide moſt convenient; then ſet in th

paralle

parallel again at convenient places; ſo ſhall both agree, as will appear when the obſtruction is removed.

But if none of theſe will do, run a line over by gueſs, and if it miſs, take notice of your error at the end, by letting a perpendicular fall on the determined point, by means of the ſquare or croſs, and the meaſure betwixt diſcovers the error: then meaſure the length of your intended walk or line, and, at the quarter thereof, ſet off the fourth of your error; at the middle, the half; and at the three fourths of the length, ſet off the three fourths of your error; this will lead you ſtraight to your purpoſe.

Trigonometry will alſo ſolve this, if you could work exactly; for here you have two ſides and one angle given you.

V. If you have a given line, and deſire to ſet off a parallel from it; but cannot meaſure off freely at both ends, there being trees, waters, hills, walls, or houſes, obſtructing; you may meaſure, ſquare or perpendicular off at any part of the given line, ſo far as you intend to go with your parallel; at, or upon which point, erect another perpendicular to run backſight and foreſight, which ſhall be exactly parallel to the given line as was required.

VI. Though I have given ſome directions for ſtaking out walks for planting, yet as your avenues and walks muſt end in ſome figure or other, whether triangular, circular, oval, *&c.* for coaches and carts to turn in, as alſo where walks meet or croſs one another, it is requiſite that there ſhould be an example laid down for that reaſon.

*How avenues may end in ſemicircles and triangles.* See. fig. 2. If an avenue ends in a ſemicircle, it may begin with the ſame, or rather, if the ground will ſuffer, it ſhould begin with a whole circle, having four oppoſite opens the breadth of the walk. If it ends with a triangle, it may begin ſo likewiſe; but rather with a ſquare, whoſe entries or opens muſt be in its angles, and alſo where the walks meet or croſs one another. You ought to lay down a plan of your avenue, but ſo as the trees in the whole may be every way lineal, except in the ſegment of a circle, where they deviate a little. The figures ſhould be at leaſt three times the breadth of the walk, but ſo as the ground will admit. Let not the trees in the figure ſtand much above half the diſtance of thoſe in the walk, but divide equally; make the breadth of the walk in proportion to its length. I think an avenue a mile in length, may be 40 ells in breadth, ſee chap. V. § II. Neither ſhort broad, nor long narrow, walks are handſome, except in the caſe of walks of ſhade, and alſo of avenues, where the front of the houſe, jaumbs, courts or pavilions, are to be humoured; for the breadth of the court ſhould be at leaſt the whole length of the houſe-front; and if there are two wings, the middle-walk of the avenue may be the breadth betwixt; and the ſide-walks the breadth of the wings: or the mid-walk may extend the breadth of the whole front, and the ſide-walks the breadth of the pavilions which are on the corners of the court: or you may divide the houſe-front in three, making the middle-walk the exact breadth of both the ſide ones, ſo ſhall they be every way lineal; but do not maſk a fine front, nor vail a pleaſant proſpect. The length of the avenue ſhould extend ſo far, as that, when ſtanding at the houſe, you may loſe ſight of the utmoſt end. When it runs over a brae, then to the eye it appears infinite; and where that cannot be had, it doth very well where the ſight terminates in a grove or circle of firs.

VII. The diſtance of trees is, ſometimes according to the quality of the ground, or trees to be planted; ſometimes to the number of rows, or as the figure to

be

e planted will beſt admit. If in a good ſoil, plant at he wider diſtance: if four rows, as in an avenue, plant t 5, 6, 7, or 8 ells diſtance: if two ſingle rows, at 4, , or 6 ells: if circular figures, or the like, at 2, 3, or ells, or as the figure is ſmall or great: and plant as they may ſhew the figure to advantage.

Some trees require a wider diſtance than others: nd of conſequence, theſe that take the greateſt growth, uſt have the largeſt diſtance aſſigned them. See the ext chapter § X.

*N. B.* To prevent your intermixing great with ſmall trees, or quick growths with ſlow ones, in the courſe of planting, ſee part II. chap. IV.

## CHAP. IV.

## ow to plant THICKETS and ORCHARDS.

### SECT. I.

AS the ground where you plant muſt be incloſed, ſo muſt the trees ſtand at ſome diſtance from the nce: if it be a wall whereon are wall-trees, let the andards be at leaſt four of their own diſtances from e ſame, that the ſun may not be kept off the wall by e height of the trees; and if you deſign fine walks und the wall, plant the row next to it with dwarf- ees, or ſome low hedge, and the trees thirty feet from eſe: if the incloſure be a hedge, obſerve the ſame rule; o let the trees be parallel to the incloſure: but every ot will not bear to be planted every way lineal, and the ſame time ſtand parallel to the incloſure: there- re it will be neceſſary, firſt, to enquire a little, what ures they are that may thus be planted; ſecondly, w to plant ſuch as will not admit of this order: d, laſtly, how to plant theſe ſeveral ways.

II. The figures that may be planted every way in row, are many; yet, for brevity's ſake, I ſhall mentio but few, as oblong and geometrical ſquares, ſee fig. 6, 7, 8, 9: rhombus, ſee fig. 10: rhomboides, ſee fi 11: oxygon or equilateral triangle, ſee fig. 12: orth gon or right angled triangle, ſee fig. 13: amblygon triangle, with one obtuſe and two acute angles, ſ fig. 14: a ſort of trapezium, ſee fig. 15: hexagon, ſe fig. 16: octogon, as the whole of fig. 2. Theſe regul polygons are the neareſt way for planting a circle.

Many more figures there are, both regular and irr gular, that will admit of this order; but theſe ma ſuffice for illuſtration. As for theſe that will not, yo may plant them parallel to as many ſides as you ca and let the reſt fall as they will.

III. Now, there are but three principal ways planting every way lineal, altho' there be more bui on theſe, *viz.* ſquare, rhombus and triangle. In t firſt, three of them make a right triangle, and fo of them deſcribe a circle, ſee fig. 5. In the ſecon three of them make a triacute triangle, and four them deſcribe an elipſis, ſee fig. 6. But this way will adm of variation. In the third, three of them make an equ lateral triangle, and four of them deſcribe an oval, fig. and ſeven of them make a circle with a center, fig. 1

IV. The manner of planting the firſt, which is th common way, is exemplified in fig. 5. Take the leng of one ſide, and divide by the diſtance you intend plant at, and the quotient tells how many; and the r mainder, if there be any, you may proportion as b fore. Then, with your determined diſtance on a chai begin at a corner and go round the out-line exactl thruſting in a ſtake at every length, where the out row muſt ſtand; theſe keeping in a ſtraight line, and equal diſtances, alſo upright and perpendicular. T way is thus; one muſt ſtand at weſt, and view to ea another at ſouth, and view to north, cauſing a thi et a ſtake in line with both, as at L: ſo, removing om ſtake to ſtake, viewing ſtill to the oppoſite, direct e third by words or ſigns, till his ſtake be in a line ith both. Thus proceed, till all the plot be ſtaked ut the way the trees ſhould ſtand when planted; as at g. 5.

But if the ground be unequal, cauſe the ſtake-ſetter old up a long ſtraight pole, with a plumb-rule for olding it perpendicular, and when he removes, thruſt ſtake exactly where the pole ſtood; but if the pole ill not do, let the viewers mount them on three foot-l or ſtanding ladders; and if that will not do, be-ke yourſelf to the rule, mentioned in the laſt chapter, r taking a line over a hill, where both ends are con-ned, as I have done in the like caſe.

But becauſe ſome ſcarcely know ſignals, the ſtake-tter muſt be told, that, when the viewer ſtands with s face northwards, and waves his right had eaſt-ard, he muſt go a little eaſtward with his pole; and hen he waves the left, then weſtward; when both s hands point at once eaſt or weſt, then he muſt hold e head of the pole ſo, if he have no plumb for his di-ction; but when the viewer moves both hands, or hat, and down, then the ſtake-ſetter muſt fix there.

V. If you plant the ſecond way in a ſquare, where e out-line round is not at equal diſtances, though the poſite ſides are; here, in this example, one ſide is out twelve and one half ell's diſtance, and the other, een, and the view being angular, and not from op-ſite ſides, makes the tree ſtand at about ten and one lf ells.

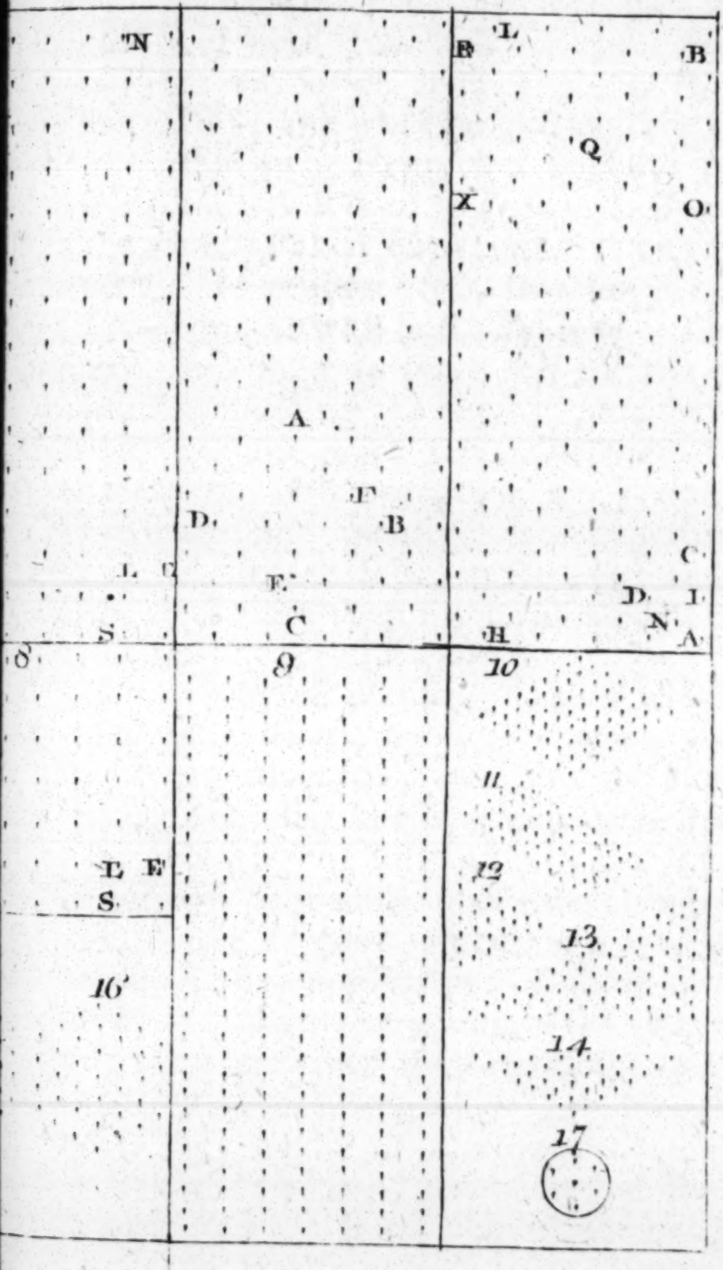
But if you will plant rhombuſoically, then 'tis done the equal diviſion of its four ſides, and by viewing oppoſites, as is repreſented by the rohmbus A B. D, in fig. 6; for tho' its angles be not ſquare, nor ual, yet its ſides muſt be equal, and angles oppoſite:

and here it may be varied according to the ſhape the ground, by ſtretching longer, or opening wider A C is its breadth, and D B its length. Or you may ſo plant by the rhomboides, as in D A F E, and con quently many more figures may be planted thereby, well as theſe varied or altered, and yet the whole co tinue in a regular order.

VI. In the third way, take an example in figure where the length of one ſide muſt be divided by th determined diſtance, *viz.* the diſtance of the fence be ing ſubtracted, the length of the ſide A B is 119, an I deſign to plant at eight and an half ells; therefo I divide 119, by 8,5. decimally; the product is 14 d ſtances; then there will be 15 rows: here one ſide i ſtaked out, whereby you may plant the whole plot thus take two diſtances on the chain, that is, hold one en exactly at A and the other at C, Again, with that me ſure on the chain, hold one end at the firſt ſtake, A, an the other at the ſecond, I; cauſe a third take the chai exactly by the middle, and, holding it ſtiff, thruſt in ſtraight ſtake at the angle of the chain, N; ſo theſe thre make an equilateral triangle: then remove, holding on end at the ſecond ſtake, I, and the other at the third, C ſtretch the chain and thruſt in a ſtake at its angle o middle as before. Thus you may proceed from ſtake t ſtake till that row be planted: and ſo on from row to row till the whole plot be ſtaked out. Remember to ſet th ſtakes ſtraight and perpendicular, and alſo to conſide their thickneſs; in all which if you be not very exact, yo cannot avoid error, before you come on the other ſide Therefore I ſhall ſhew you another way, which is mor ſure and exact, and coſts leſs pains, *viz.* firſt let tha one ſide be marked out as before, and having ſet tw or three ſtakes of the ſecond row, as is juſt now taught then upon two, hold to the chain, and plant anothe ſtake to begin a third row, as at D; then take th

exa

Fig 5 Fig 6 Fig 7 page 20



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ct diſtance betwixt L and D on the chain, and ewith ſtake out the ſide B R; and becauſe there is odd row, take the exact half of that diſtance by bling the chain, and ſet from R to L; then with the le length go betwixt B L, thruſting in a ſtake at length; and here you ſhall find three diſtances, the half that was ſet off at the angle R. Thus two are ſtaked out; and whoever can do this, can alſo e out the other two, ſeeing the oppoſite ſides are verable: for as A B is to H L ſo is L B to H A. hen the plot is ſtaked out round, let one ſtand at ronting B, and another at O, fronting R; cauſe a l ſet a ſtake in line with both, as at Q. Thus you proceed from ſtake to ſtake, till all the plot be ked out, ſtill minding the way of your viewing. plot will contain more trees this way, than by other method. The two plots, fig. 5. and 7. are alike in ſhape and quantity, each containing one two roods, ſixteen falls, thirty ells: and fig. 7. s eleven trees more than fig. 5. planted at one and ame diſtance.

I. A fourth way of planting, is that which is orily uſed in thickets, fig. 8. for when the trees large, every other row, eſpecially the ſhort ones, be taken out, that the reſt may have freedom, o be benefited by the ſun and air; thus one fruitat large, will bear more than four crouded ones, et continue in as good order; and will anſwer, me meaſure, the expectations of thoſe who com-, while their orchards are young, of their having few ſeeing the more trees they have, the more fruit be expected: therefore, when their branches beo meet, they ought to remove them, lop and them by their hedges, I mean, by the diviſors of corn-land, and the trees, being now full grown, ble to defend themſelves. This is alſo applicable to foreſt-trees, ſeeing, while they are young, afford little ſhelter, except they are more than ord ry thick; and yet, when they grow up, cannot a at that ſtatelineſs and magnitude you would deſire, leſs the ſame care is uſed, *viz.* the removal of ſecond row, which may be effectually planted a the borders of your corn-land, meadow and paſt which now needs no fence, except a few thorns about to keep the cattle from rubbing, In orch if the ſhort rows be cherries and plumbs, they not long-lived, will be paſt their prime before the a and pears, which may be in the long rows, re their room from them.

The method is this; you muſt mark out the round about, and view from angle to angle of geometrical ſquare: but then the diſtance of the o row muſt be greater than in the firſt method; o ways the trees will ſtand much nearer: as 7 is to is the diſtance of the outer-row round, to the diſt of the trees through the plot.

Or you may plant it by viewing from oppoſite only you muſt plant the out-line of ſtakes rou bout, at half the former diſtance, and let the ſetter paſs by every other diſtance; except you to plant gooſeberries and currant-ſtandards in blanks, and then the trees and ſhrubs together ſta in the firſt method: and now the proportion is, is to 10; ſo is the diſtance of the outer-row roun the diſtance of the trees: or as 10 is to 7; ſo diſtance of the trees to the diſtance of the oute round. Such proportion doth the ſide and diago a geometrical ſquare bear the one to the other, bundantly exact for our purpoſe.

VIII. The fifth way is, and a very fine one, orchard and kitchen-garden are all one; or wher have corn or graſs amongſt your trees; or trees, barren or fruitful, among your corn or graſs, ſee 9.

for a kitchen-garden, divide it in ridges, making ables or paths in the middle of the wideſt inter- and then ſubdivide it ſo as the trees may fall in niddle of the beds or borders. If for corn-land, ridge muſt be between each row, plowed within foot on each ſide the rows or ranges of trees; h eight foot borders muſt be delved each ſpring; f ſtiff clay, at both equinoxes, and no vegetable red to grow thereon: for a man, or two, with hows, 10 inches broad, will quickly go through in ſummer, and cut the weeds at their firſt peep. this would certainly be a great improvement: and her you apply to corn or graſs, fruit or foreſt , I would adviſe you to keep them thus clean of s.

. A ſixth way of planting trees is, to make all alks or intervals open from the houſe proportion- ſo as, when you ſtand at the houſe, the walks appear all of an equal breadth to the eye; this d ſuit well my plan of the houſe, being like the ending forth his beams.

The diſtance of trees in thickets and orchards, her according to the quality of the ground, trees planted, or method of planting.

n a good and deep ſoil, there trees will live long, to a great magnitude, and require a large diſtance. es planted the firſt, ſecond and third way, may be eight to ten ells diſtance. Pears ſo planted, at r twelve ells: and of theſe planted the fourth may be at the leaſt diſtance mentioned; becauſe will ſtand near the greateſt, when every ſecond noved: but, if planted the fifth way, they may om ſixteen to twenty ells one way, and from to ten the other. Cherries and plumbs from five to ſeven ells, being planted the firſt, ſecond, thir fourth way. As for the diſtance of dwarfs and trees, ſee the next chapter, § V.

At the ſame diſtance with pears, plant oak, aſh, plane, beech, walnut, cheſnut: with apples, pl greens, ſervice, poplars. At the diſtance of plu and cherry, plant mapple, horn-beam, hazel, birch burnum, aſpen, alder, willows, pine, fir, yew. further directions, ſee the laſt chapter, § VII.

If the ground be level, plant ſuch trees as g loweſt at the ſouth-ſide, and ſtill higher by degrees wards the north, that the talleſt and ſtrongeſt may on the north-ſide; ſo ſhall the northern blaſts be gua ed againſt, and the ſun-beams the better received mongſt them. If the ground be not level, plant ſ as grow low on the higheſt ground, and the contr And ſet always the crooked or leaning ſide towards ſouth-weſt, whence come the ſtrongeſt winds, wh in a few years will make them the more erect; for may obſerve, that all trees that are not well ſhelte from theſe weſterly winds, lean or decline towards eaſt.

When the ground is all marked out with ſtakes, on the rounding-ſtring, and make the holes: ſee laſt chapter, § VII. I uſe not to make them leſs t ſix foot diameter for ordinary trees; and you may fer the outer-row of ſtakes to ſtand till you plant reſt, that you may view thereby.

How to order the ground for planting and incloſu ſee the ſecond part.

# CHAP. V.

## How to make the KITCHEN-GARDEN.

### SECT. I.

OF all gardens the kitchen-garden is the beſt. In
every garden it is ordinary, firſt, to make a bor-
er at the wall; ſecondly, a walk; and, thirdly, a
order on the other ſide of the walk: thus the walk,
ith a border on each ſide of it, ſurrounds the whole
ot, parallel to the wall: but if your ground be large
ough, I would adviſe you to make a larger diſtance
twixt the walk and the wall. It is alſo ordinary to
vide the garden into four plots, by two walks croſſ-
g from ſide to ſide: tho' I do not approve of croſs-
alks in gardens, yet if you would have more than
e, which divides the whole into two parts, make
em all parallel through the plot, leading to the houſe,
d equi-diſtant from the middle, ſtill making the gates,
ors or entries, front the walks.

In your kitchen-plots, and in nurſeries for trees,
ant no trees through the ground: for when they
ow up, they cover and choak the ground, ſo that
u will be neceſſitate to ſeek for another. Therefore
ke only three borders next and parallel to the walks
ound, on each hand; plant the firſt, or that next
walk, on both ſides, with a holly-hedge; the ſe-
nd with gooſberries and currants, and the third
th dwarf-trees; keeping the ground all open and
id within for kitchen-herbs and roots; which muſt
orderly divided into ridges; and theſe again divid-
into beds, furrows, and drills, for your more or-
ly and convenient planting and ſowing.

II. As for the proportion, take care that your walks
end in breadth according to their length, *viz.* a

thouſand foot long, thirty foot broad ; five hund
foot long, twenty foot broad ; two hundred and fi
in length, fifteen in breadth ; and an hundred foot lo
ten foot broad.

Make the borders ſix foot broad ; the tables or pa
betwixt the borders, two foot broad ; and theſe b
twixt the level ridges, wherein the ground is divid
three foot broad ; the beds, ſix foot broad, with fo
and half furrows : you may make ſeven of theſe be
in each ridge, and the whole length of the plot
running from the houſe ; but if your ground be ſma
you may make your borders and beds narrower ;
ſtill let the whole plot, ridges, borders and beds,
equally divided, and their areas or edges three inc
higher than the furrows or paths, and ſo much hig
than the ſide of the walks, as the middle of the w
is higher than its ſides ; all handſomely clapt up w
the rake-head, by a line : and the like order you m
obſerve in your ſeminaries and nurſeries of trees ; th
plant and ſow by lines and drills, both for beauty a
uſe.

When you ſet about this, divide the bed, border
ridge, at both ends, into ſo many equal parts, by
help of the long rule and ſmall ſticks ; then ſtretch
line from end to end by theſe ſticks, and with the c
ner of the rule, make a mark by the line, and then
ſet your herbs and plants ; and for ſetting of ſee
meaſure out, and ſtretch on the line as before,
with the ſetting-ſtick make the holes by the line,
too deep, and therein put the ſeeds. And if you
in drills, make a ſcratch, or little ebb furrow, w
the point of the ſtick by the line, and therein ſow
the rows be two foot diſtance, let the firſt be one f
within the edge ; if ſix inches aſunder, make th
three inches off the edge, and ſo proportionally.

N.

*N. B.* I have told the diſtances of each ſort of kitchen-herbs and fruits, part II. chap. VI. where is in- nded ſix foot broad beds; but where they are leſs, ere muſt be fewer rows.

III. The kitchen-garden may be placed neareſt the bles, for the conveniency of wheeling in dung, and t of ſight of the front of the houſe: becauſe of the propriety of the view, to ſee dung in that garden ere the eyes of the perſons in the houſe ſhould be re agreeably entertained, by lawns, avenues, viſtas, l other more agreeable proſpects than dung, which neceſſary in kitchen-gardens: and when you plant ſow, place every ſpecies by themſelves, except h mixture as is mentioned, part II. chap. I § III. l where you have not a whole ridge, or at leaſt a of a kind, you may compleat them with ſuch as neareſt of growth and continuance: alſo plant ſuch are of long duration, and ſuch as muſt be yearly ewed, ſeverally, each in ridges or beds by them- es; the order is to make every ſort oppoſe itſelf. example, plant perennials, ſuch as artichoaks, *&c.* hemſelves, that they may not interfere with that und which is to be wrought up annually for the an- l productions of this garden, ſuch as onions, car- , turnips, leeks, parſnips, *&c.* Perennials are plants as continue many years in the ground; uals are ſuch as uſually die immediately after they bear ſeed, and that is uſually, tho' not univerſal- he firſt or ſecond year.

V. As for phyſical-plots, you may have them in ridge of the kitchen-garden next the borders: if you incline to have no other pleaſure-garden, may have flowers there, and on the borders next walks alſo: and the ridge or interval betwixt the and wall will be excellent for all early, rare tender plants. You may rank your phyſic-herbs in tribes and kindreds, planting every tribe by them ſelves, and you may alſo place one of each kind i alphabetical order.

*N. B.* How to order hedges, ſee part II. chap. I

V. For walls, bricks are beſt; next to theſe, ſtone a lime; four ells is low enough, five or ſix, if you pleaſ

Make your walls of ſouth aſpect in ſtraight lines, b not in ſemi-circles, which is by ſome moſt erroneouſ practiſed; for there the wind being pent up occaſio ſquirles; and retards the ripening of the fruits the planted; nor ſhould there be any hot-beds nearer t wall than twenty feet, excepting cucumbers in t ground for picklers. The diſtance of wall-trees w inform you what diſtance to make them; as for e ample, twenty-five foot is the diſtance of cherries a plumbs, except ſuch as the May-cherry, which bei dwarfiſh, requires leſs; twenty-eight foot for ap cocks and peaches, twenty-ſix foot for apples, a twenty for pears. Obſerve never to plant cherries mongſt any other wall or ſtandard fruit-trees; for fruit-trees will proſper under the drip of their leav beſides, in planting walls, I would chuſe fruit-trees a kind to be all planted by themſelves.

In ſtraight walls divide equally, and plant none the corners: meaſure firſt off ſix foot on each ſide gates or doors, for honey-ſuckles, jeſſamines, *&c.* A whatever be the diſtance of your trees, ſet them h from theſe, as alſo from the corners; except wh you make all their heads ply one way: if on a wall, ſuch may ſtand three foot from the corners, or honey-ſuckles they lean from, and a whole diſta from theſe they lean towards. You may plant a g berry and currant in the intervals of your wall-tr while young, and when the trees approach, rem them. Let the roots of your wall-trees ſtand nea foot from the wall, with their heads inclining tow

Wall-trees in orchards, whoſe ſtandards are in the incunx, ſhould ſtand oppoſite to the middle interval the ſtandards.

The diſtance of dwarf-ſtandards is ſixteen foot, ere there is but one row; and in following this le of the three borders, they will ſtand juſt ſixteen ot off the hedge, obſerving to plant in the middle of borders. The diſtance of gooſberries and currants y be ſix foot. But in all your plantings and ſowings ide the ground ſo as each kind may ſtand and grow ually.

To conclude, theſe three borders ſurrounding each of the walks, handſomely made up and planted aforeſaid, will ſecure the ground within from hurt winds and colds, and make people keep the walks; rs handſomely paled being on the entries to the ges, ſo as they may neither hurt you nor them- es. Alſo the hedges, dwarf-ſtandards, ſhrubs, and ll-trees being well pruned and plied, with the bor- s and walks kept clean and orderly, will make it k like a garden of pleaſure, and hide all the rug- neſs that happeneth in kitchen-ground by delv- , dunging, turning and overturning throughout the r.

# CHAP. VI.

## w to make the PLEASURE-GARDEN.

### SECT. I.

Leaſure-gardens are commonly divided into walks and plots, with a border round each plot; and e corner of each, may be a holly, or ſome ſuch b, trained up, ſome pyramidical, others ſpherical; rees and ſhrubs at the wall well ply'd and prun'd, green thereon cut in ſeveral figures, the walks laid with gravel, and the plots within with graſs, ſeveral places whereof may be flower-pots; the b ders boxed, and planted with variety of fine flow orderly intermixed, weeded, mowed, rolled, and ke all clean and handſome.

Plain draughts are only in uſe, and far preferab that which I eſteem moſt is, plain ſtraight borders a paths running all one way, *that is*, from the hou with one walk dividing it in the middle, leading the houſe-door; and if the ground be large, you m make one round by the wall alſo, as the pleaſure-g den in fig. I. Let the borders and paths be both a breadth; *viz.* four foot; hedge the borders w box-tree, and plant them with flowers; lay the pa as well as the walks, with gravel; plant the walls w fruit and flower-bearing trees variouſly.

Outer-courts have only one border at the w planted with laurels and other greens; one pathed brick wall in the middle, leading to the middle of houſe-front, with a long graſs-plot on each hand.

II. The borders of your kitchen-garden, round walks, may be boxed with thyme, lavender, hyſ rue, *&c.* the next with parſley, ſtraw-berries, viol jelly-flowers, *&c.* Cherry-gardens and phyſic-garde with ſweet-brier often cut, or box cut three times, *annum*, in April, June and Auguſt, remembring to their roots at the in-ſide every ſecond year, that th exhauſt not the ſtrength or nouriſhment of the flo ers or herbs. But that which I prefer for flower-g dens above all, is dwarf-juniper, raiſed from the ſ and planted thus; when the ground is levelled, m ſure out the borders, but raiſe them not above walks, except you intend to lay gravel, ſtretch a li and, with the edge of the rule, mark it, and then ſet the young ſlips of box, or the young plants of niper, at two years growth, then prepare the bord

delving in conſumed dung of cows and ſheep, co-
ing on a little lime, top'd with a little ſand, to lie
ſummer, kept clean from weeds by hoeing. At
beginning of winter delve and mix it together, to
all winter unraked, and at the ſpring re-delve, ſtir
mix it thoroughly, and trim and plant your flow-
and other plants in their ſeaſons. See part II.
p. VII.

II. In making the walks in any garden, firſt, level
the borders at its ſides; ſecondly, drive a row of
es in the middle of the walk, and level them ac-
dingly, *i. e.* ſtretch a line croſs the walk betwixt
two level borders, and mark where it hits the
e in the middle of the walk; do this at both ends,
by viewing betwixt, you will level the reſt; ſee
next chapter of levelling. But you may obſerve,
t the walk muſt riſe a little in the middle, and yet
middle of the walk, and top of the boxing of the
der muſt be level, *i. e.* the boxings ſo much above
ſide of the walk, as the middle of the walk is a-
e its ſides. Where your boxing is timber or
ne, fill up the border of earth to the top thereof;
where your boxing is of box, juniper, or the like,
earth within the border, and edge of the walks
paths without, muſt be equal.

As for the riſe or ſwell that walks have, which
kes them the ſegment of a circle, graſs or brick-
lks may have, for thirty foot broad, ſix inches of
ll; for twenty foot, four inches; ten foot, two
hes; and let gravel have an inch more proportion-
; agreeable to the rule of proportion in arithme-
k, as twenty is to four, ſo is thirty to ſix. If gra-
or brick walks, or paths, lie by the ſide of graſs,
ke the graſs an half inch higher than ſuch. If the
lk be graſs, make two foot tables, or paths of
vel, betwixt it and the border.

IV. To lay graſs, firſt level the ground, whether walk or plot; and it is the better to lie a year ſo ma up, before you lay the turf; becauſe it may be lev ed up again, if it ſink into holes: if it lie wet, b tom with ſtones and rubbiſh; and, if the earth fat, take it out, and put in ſand: however, lay t ſand a foot thick immediately under the turf; th by the ſquare, ſtretch lines, ritt with the ritting-ir which is an half round put into the end of a crook ſtick, and raiſe the turf with the turf-ſpade, which broad mouthed, but otherwiſe the ſame with the h bandmens breaſt-turfing-ſpade: let the turf be of qual thickneſs, near inch and half thick, a foot a half broad, and as much in length; lay their gre ſides together when you put them in the cart, but not roll them when brought home; lay them all ev and cloſe, feeling each particular turf with your fo ſo as you may diſcern any inequality, to be help immediately; in laying, ſtill beat every two or thr rows of turf, while moiſt, with the wooden-beat and when the whole is laid, and well beat, roll well with the ſtone-roller, which ſhould be as big a hogſhead. The ſpring and autumn is the beſt tim and if you incline to keep a good pile of graſs, ſuf it never to grow inch long; beat, mow, and roll often, eſpecially in the mornings and moiſt weather

V. But if you would lay the hard tile or brick wal prepare as for graſs, remembering it wants the bread of the brick of the true height; for you muſt ſet th all on their edge, cloſe by one another on a bed lime, laying the ſide of every ſecond row croſſing t ends of the other, and place one in the middle of t walks, that both ſides may be regular.

VI. To lay gravel, cleanſe firſt the bottoms of t walks of fat earth, and root-weeds, and bottom with ſtones; and lay over that, about half a foot

cle

n round gravel, and about three inches top-gravel
equal greatneſs, which may be like beans and
ſe; you muſt make it thus equal by ſifting, and
read and beat; and when completely levelled,
it well with the wooden-beaters, while moiſt;
n roll ſoundly with the wooden-roller, and after-
ds with the ſtone-roller, eſpecially in rain, for
ch the ſpring and autumn is beſt: but if in dry
ther, you muſt daſh water on the roller conti-
lly in rolling, with the watering-pot, and if you
forced to uſe ſea or water ſand, you may beat
e good clay to duſt and mix with it before you lay
weed, and roll frequently.

VII. For the orderly planting of flowers there may
three ways; as *firſt*, in the borders of pleaſure-gar-
s or courts, plant five rows in the border, and in-
mix them regularly, *i. e.* divide and plant every dif-
nt ſort, through the whole garden, at equal diſtan-
, and not only ſo, but of every diſtinct colour al-
let never two of a kind, nor two of a colour,
d together, without other kinds and colours inter-
ing, ſo as there may not be two or three of a
d or colour at one end, border, plot, or place, and
e of them through the reſt, but univerſally and
amentally intermixed: and when you find a breach
ſome being paſt the flower, you may have various
ual flowers ſown in pots, ready to plunge into the
ancies of the borders for continuing this beauty.

*econdly,* In my ſort of flower-gardens, which has
ders and paths running all one way, *viz.* from the
ſe, plant five rows, and intermix them, not as in
laſt way, but ſet five rows of each kind croſs the
der, ſo as twenty-five of each ſort may ſtand in a
metrical ſquare; for inſtance, a ſquare of tulips,
uare of boars-ears, a ſquare of crocuſes, a ſquare
jelly-flowers, a ſquare of anemonies, and a ſquare
of

of cowſlips; and ſo a ſquare of tulips, another boars-ears, *&c.* again intermixing through the wh of that border, the colours of each ſort: then m you make the next border ſo intermixed, but differin minding, that as you intermix the bulbous and fibro plants in each border, ſo muſt they be alſo in the cr ſing, that the ſquare of fibrous in this way, opp the ſquare of bulbous in the next; and likewa whatever border ſuch ſorts are in on the one ſide the walk, ſet the very ſame in the border equi-diſta from the walk on the other ſide, that the whole m be regular and uniformly intermixed all the year, lo ing from all ſides, ends or angles.

*Thirdly*, In nurſeries of beds and ridges, plant e ry kind in thickets by themſelves, and annuals a perennials by themſelves, excepting only, that y muſt intermix their colours, *that is*, make a wh bed or ridge of each kind, ſix rows in the bed; the dw fiſh may be eight rows: thus every thicket of the flowering in their own order will have a great ſho and at a great diſtance. Here alſo obſerve uniformi *that is*, alike on each hand, ſee the laſt chapter, § I for if you have a ridge or bed of jelly-flowers, or t like, on the one ſide, plant another thereof at the ſa place on the other, *&c.*

And becauſe flowers muſt be removed, ſome in o two, or three years, and the earth renewed or riched, and properly prepared, elſe they degenera becauſe in a length of time they exhauſt the ſubſtan of the ground, at leaſt that part appropriate to the therefore you have a good conveniency for effectu ing the ſame by theſe laſt two models preſcribed; then you will have ſome beds or ſquares where yo annuals ſtood, into which you may re-plant yo tulips, anemonies, or the like; and ſo another ſ where theſe ſtood, and your annuals again whe

the

ſe laſt were : and becauſe here you remove a whole
d or ſquare of a kind at once, you may very con-
iently prepare, delve, ſtir, beat, ſift, and mix it
oughly with the proper ſoil, a thing moſt neceſſa-
; and this you could not well do, where they are
ttered as in the firſt way. See the rules mentioned
t II. chap. I. § X. and chap. VII.

VIII. As to terraſs-walks, if the brow on which you
ke them be not too ſteep, the work will be the more
y: if you build them up with walls, be careful to found
p enough according to the level; and if the middle
he terraſs be on the central line of the houſe, or
any walk, make the ſtair to part at a plat on the
d, going down at both ſides ; ſo much of the ſtair-
may be within, as that the outer edge thereof
y be in a line with the border at the wall ; by this
ars not the walk; the reſt may be at the ends :
nt the borders at the upper-ſide of the walk with
l-trees, the under-ſide, being but an ell high, with
els, *&c.* But if your terraſs conſiſts only of walks
ſloping-banks, you may have the border at the
d and foot of each bank, on either ſide the walks,
nted with ſtandard-cherries, *&c.* and the banks of
ets, ſtraw-berries or graſs.

X. As for ponds, make them large and broad, ſuch
ng beſt both for the health of fiſh and fowl ;
are, triangle, circle, oval, or what figure fits your
und beſt ; let them be five or ſix foot of ſolid wa-
at leaſt, with ſluices to let it run in and out at plea-
; keep them clean ; for ſuch water is the moſt
erable for watering plants.

. *B.* I am againſt arbuſt and cloſe walks, except
s naturally cloſing, whereby we have both ſhade
air.

CHAP.

# CHAP. VII.

## How to level GROUND.

### SECT. I.

I HAVE often wiſhed that there might be ſome found, whereby this expenſive work might bec more eaſy, There are two ſorts of leveling, *viz.* horizontal and ſloping: the *firſt* is beſt known, the *laſt* more profitable and convenient. For exam I have made a plot ſlope four foot by two hun long, and eighteen inches by three hundred and ei foot the other way: this was not perſpicuous to gar eyes; yet to have made it horizontal would been ridiculous, as to time, pains and expences. in leveling the walks about a plot which ſloped turally, ſo as to make them correſpond with ground, I behoved to make the middle walk a with the ſide ones, whereupon it ſlopes ten foo three hundred and ſeventy long: now if I had m this horizontal, it would have been five foot, or ſteps lower than the one ſide-walk, and as much h er than the other, and ſo more diſagreeable an convenient than at firſt, both as a walk, and wit ſpect to correſpondency with the reſt of the gr within; therefore I am for leveling any ground ſloping manner, that it may turn a little to the if poſſible, for draining of water, and that it correſpond with its adjuncts, and above all, in to prevent the more coſtly way; for 'tis certain principal obſervation in leveling, not only to the ground of itſelf ſerve itſelf, but alſo to level it lies moſt conveniently, which is the cheapeſt eaſieſt way of leveling. When you have a ro ſtakes ſet in a ſtraight line, and at about twenty

diſ

ance, as in the edge of a border or middle of a lk, the way of levelling them, either horizontally ſloping, is to mark and put a nail in the two ſtakes ich are at the extremes or ends thereof, and to view twixt; cauſe mark all the reſt which are betwixt in evel line therewith. This is the eaſieſt, the exacteſt l quickeſt way: and, by the ſame method, you y go round any plot, and conſequently croſs it eve- way according to this direction.

In what you would have horizontal, place the long e and the level at one end, ſuppoſe the ſole of the or, till the plumb fall right in rencountering, and w alongſt the ſaid rule, as on a fowling-piece, that u may ſee what part of each ſtake it hits, and cauſe e, with a piece of white paper, or white hafted ife, hold the ſame at each ſtake, its haft tending out, the nails which bear up the line, and direct him by rds or ſigns to hold up or down till it be juſt level; en they are all marked, meaſure down ſo much on h ſtake as was raiſed up for conveniency in view- : then mark, put in nails a little, ſtretch on the , and level up the earth or gravel thereto.

And where you would have determined ſlopes, ſet on level, and make the moſt diſtant ſtake in a level therewith; then meaſure down upon the ſaid ſtake ole, from the place marked, ſo much as you deſign ope, and put in a nail with white paper about it: at the upper-ſide of the rule in the ſtake at the r, put in another nail, and by viewing betwixt e two, mark all the reſt as before. If the diſtance wixt the extremes be great, ſo as the ſight may le, let the viewer deſcend from his ſtation, and e forward at every five or ſix ſtakes; and holding knife at the laſt marked ſtake, cauſe his aſſiſtant or e-marker proceed.

To level as the ground lies, let its ſlope be what
will, you need neither level nor rule ; except y
pleaſe to try how much it ſlopes after it is done, for
tisfaction ; only ſet ſtakes as before, and viewing t
ground narrowly, put nails in the ſtakes, which are
the extremes, where you think the ground will r
when leveled, to make it ſerve itſelf, and as it l
beſt or eaſieſt for leveling ; and when you have co
cluded upon the level at the extremes, mark all t
ſtakes in the interval, by viewing as above.

II. But to proportion the level to the ground,
the whole art of leveling. 'Tis true it is eaſy, if y
have a plot or walk a foot higher at one end, to ta
half a foot thereof, and lay on the low end, ſo as t
two ends may be horizontal ; or, if it be horizont
to take nine inches off the one end, and lay on the
ther, that it may ſlop eighteen inches ; but if ſo
places of it lie one way, and ſome another, and ſo
neither the one nor the other, this increaſeth the di
culty. Wherefore you muſt firſt drive ſtakes at the c
ners of the plot ; then view the ground about, a
put nails in the ſtakes where you would have the le
run, or at leaſt where you think by your eye it m
fall moſt conveniently, to make it contain itſelf, a
the more eaſy to be leveled : alſo ſet up ſeveral ſta
in the intervals and croſs-ways through the plot fr
oppoſite angles, and by viewing betwixt the fore
nails every way, mark all the ſtakes level ; but if y
cannot ſee from the marks of this ſuppoſed le
which are on theſe corner ſtakes, ſeeing there may
ſome below the ground, little hills, or ſome ſuch
ſtructions lying in the way, then meaſure equally u
each of them, ſo far as you think convenient for
ting your ſight, and mind to take down the ſame a
after viewing.

When all is marked with this ſuppoſed level, go o-
r it, and note narrowly how it will agree, that ſo, as
ur reaſon ſhall teach you to alter, you may take up
e end or let down the other, or both; till you bring
to ſuch a proportion, as to do its own buſineſs it-
f. Or you may work more exactly thus:

Suppoſe you have a border, or middle of a walk,
h ſixteen ſtakes driven therein at twenty feet di-
nce, all marked with a ſuppoſed level, and ten of
ſe marks above ground, and ſix under ground:
*ſt*, Meaſure how far the marks on each of the ten
kes is above ground, and write them down par-
ularly; and adding their meaſures together, you
thirteen foot four inches. *Secondly*, Meaſure how
the marks of the ſix ſtakes are under ground, write
wn, adding them together, and you find it twelve
t; ſubtract the one from the other, and the diffe-
ce is ſixteen inches, which muſt be divided by ſix-
n ſtakes in the border, that is, one inch to each
e; ſo that this ſuppoſed level is an inch higher o-
all than the true level, which being taken down,
make the ground there level itſelf, and no more.
s may ſuffice for an example. And if you can thus
portion the level to one border, walk, or one row
takes, you may, by the ſame rule, find the level for
ſtakes round and acroſs the plot, and conſequent-
evel the ſame accordingly; for having once con-
ed on the level, drive ſtakes over all the plot as
y firſt way of planting of trees, chap. IV. § IV.
mark and put nails therein, as above is taught for
ying the line; except you mean to follow my me-
of leveling the kitchen-garden, or the ſame for
ting or ſowing, which is only to level one border
by ſtakes and lines, round each plot, and by the
evel up the ground within correſpondent thereto,
long in trenching: altho' this is not ſo proper for

courts and graſs-plots ; yet, as by this means I uſ level ground without a level, ſo do I think this w of finding out the true level, by means of a ſuppo one, worthy your notice, and, if rightly improv will ſave you much money and pains.

Be cautious in founding your walls, leſt you und mine them in leveling : nor is it convenient ſometi to confine your level to the foundation of walls alr dy built ; for in ſo doing, you may loſe more, than would coſt you to caſt down and rebuild : but in ſu caſes, you may rather build under gradually.

III. There are ſome bad lying plots, and wal with an aſcent at the head, hollow in the middle, a level at the foot ; theſe and the like are very troub ſome to level under one denomination ; for the taki down the hill, bares it ſo, that plants cannot proſp thereon. Some are neceſſitate to take out the grav tile, or ſtones, ſo much deeper, and travel earth gain ; but I rather adviſe to make terraſſes : you ne not confine yourſelf to the number of banks, but o ly to the proportion and uniformity. If it tend all o way, high at one end, and low at the other, then it proper enough for perpendicular walks that front t houſe ; but if low in the middle, and high at both en or low at both ends and high in the middle, th more proper for parallel walks, whoſe extremities a equi-diſtant from the central line of the houſe : r member to divide and ſlope theſe equally.

This minds me of ſome abuſes which I have ſee as a plot of ſloping leveled ground, with another h rizontally leveled lying at the foot of it, at leaſt n under one ſlope ; or horizontal walks and borders lyi by the foot and head of ſloping plots, theſe are u ſeemly ; for you ſhould always make them ſlope und the ſame denomination, except in ſteep and hig banks : I have made walks of eighteen foot broa

ſlop

ope eighteen inches from one ſide to the other, be-
auſe the whole plot ſloped the ſame way, ſo much
oportionally ; yet to the eye it appeared very plea-
nt : but where ſuch horizontal and ſloping pieces lie
ontiguous, the defect is eaſily ſeen ; therefore if you
e neceſſitate to lay ſome plots ſo, altho' I know no
aſon for laying walks ſo, make rather a hedge to
tercept ; and in all your works let there be a con-
xion.

IV. There are ſome more obſtructions in leveling,
in a long walk, when you have the two ends found
d marked, either with a ſuppoſed or true level, and
nnot ſee betwixt, ſo as to do it exactly by reaſon of
ngth : here two may go to the middle, or near it,
here you may conveniently ſee both ends, looking
a diſtance backward and forward ; there drive in
o ſtakes near to the length of the long ſtraight rule,
which hold on the rule, and let one view alongſt
e ſame, till the mark at the weſt-end be level there-
ith, and likewiſe the other towards the eaſt, ſo that
th may alter up or down till they have their deſires
once : then fix the rule, and having as many ſtakes
as is needful, you may view backſight and fore-
ht thereon, and level them all exactly.

V. But if a wall, a houſe, *&c.* intercept, meaſure
rpendicular, and exactly up to the top thereof, and
the other ſide meaſure down the ſame again ; and
ſet forward the level, but ſo as it may communicate
ith the reſt when obſtructions are removed.

But if a hill, go to the top, ſet the rule level, and
ying an eye thereto, cauſe one with a long pole go
wn, till its top be level therewith, he holding it le-
l by a plumb-rule ; then deſcend from your ſtations,
d ſet the upper end of the rule where the pole ſtood,
ere level it, and do as before ; thus, from ſtation to
tion, to the foot of the hill, keeping an account

in a note-book what poles and parts it contai which may be as eaſily taken down on the other ſi by the ſame method.

But if it be poſſible to ſee over the obſtruction three footed ſtanding ladders, by help of long poles pikes, as I have done in the like caſe, raiſe your le thereon, and having viewed and marked that on the ther ſide, meaſure down the ſame there, *&c.*

VI. I might here ſpeak of the ſolidity of ear whereby you may more readily count the expence leveling: but having ſhewed in the next chapter, § how to meaſure ſolids, I preſume it is applicable earth, as well as timber, ſtone, *&c.* For if you kno the breadth, length, and depth thereof, you may fi how many ſolid ells, *&c.* And if you know how m ny ells and parts will load a cart, and how many ca a-day, you may go near to calculate the coſt of t whole.

VII. In leveling any ground, for kitchen-ground, chards or nurſeries, take not away its good earth ſurface, as you bring down the heights, but alwa turn over the upper part thereof behind you, carryi away that which is below ſo much deeper, that it m contain that ſurface, and put the bad earth in the b tom of the hollows, with better mould above it.

In the practice of leveling, or other works, contri the working ſo, as there may be ſtill a motion amon all the parts: and altho' carts are cheaper for leveli than wheel-barrows, if the way of carriage be not ry ſhort; yet if you do not ſet as many men to fill carts, as may have the one full againſt the other co in, and no more, you loſe conſiderably; and this be according to the diſtance of carriage, or as earth is capable of being wrought: and ſo with wh barrows; three barrows for two wheelers and one ler ſometimes doth well; ſometimes more fillers

fe

er wheelers; yet ſtill let them have a ſpare barrow; if this could be done with carts alſo, it would be reat advantage: wherefore, in my opinion, there o way ſo expeditious for this effect, as the carts three wheels, whereby two men with two of theſe s, and one horſe, can do as much as three men, horſes, and two carts; for one man to fill the led-, the other man to drive the one horſe; and when comes in, he has nothing to do, but take the traces hooks off the empty cart, and put upon the rings he full one, and ſo drive on. This cart has no ns or limbers, but a ſwingle-tree or breaſt-board re, where the rings that keep the traces are: it a handſome folding body; the third wheel is a-t thirty inches in diameter, all of iron, and runs in eers of the ſame, faſtened perpendicularly under the dle of the fore-breaſt, with an axle of iron: the er two wheels are common, but if they have an axis, the better.

III. To bring in water in pipes to your houſes, rts, gardens, ponds, parks, *&c.* conſider the level; as the place into which you convey it, muſt al-s be lower than the fountain from whence it es, otherwiſe it cannot flow thither; ſo you muſt notice, that no hill in the way of its conveyance ſo high as the fountain itſelf. You may find the l by placing your inſtrument at the well or foun-, as is directed in walks; and if a hill intercept ſight, plant on the top thereof, that by backſight foreſight you may find the difference, and hence may know whether you can carry it about the ruction; but if the diſtance be far, you muſt ds be the more exact. As for the inſtrument, the s deſcribed chap. III. whoſe ſights may be two ſpect glaſſes, may do well enough, whether for one many ſtations. Let one ſtand at the ſpring-head, another betwixt and the place to which you deſire to ry the water, a large diſtance aſunder; but ſo as a th man about the middle may ſee both their mark-boa *that is*, on their pike-ſtaves, and direct them to l level by his back and fore ſight, deſiring them to k account what feet and parts; and ſo come forw till the aſſiſtant at the well plant where the forem ſtood: and thus proceed quite in a ſtraight line, fr ſtation to ſtation ſo long as is needful: at length, all the meaſures of back ſtations together, and thoſe of the fore ſtations; ſubtract the one from other, and the remainder gives the difference of le betwixt the fountain and the appointed place.

Allow for the fall of water, for every thouſand f in length, twelve inches of ſlope at leaſt.

## CHAP. VIII.

### How to meaſure, divide, and lay out LAND,

### SECT. I.

SOME, following other country-books, ignora meaſure out ground with their meaſures: th fore I am here to inform ſuch, that, in meaſuring figures, whether ſuperficial or ſolid, it is requiſite know, *firſt*, Wherewith they ſhould be meaſured; *condly*, How they ſhould be meaſured.

Land is done by ell or fall meaſure, as is alſo ſons rough-work buildings; ſtone, board and g by foot-meaſure, twelve inches a-foot, and no diſt tion made betwixt a Scots and Engliſh foot; the G ziers uſed only eight inches, but the act of parliam hath reduced them to twelve, as others. Some wo think twelve inches but a third part more, whereas equivalent to two and one fourth of theirs; for 8 ti 8 is 64, and 12 times 12 is 144, out of which I

ce 64, and the 16 remaining is one fourth thereof.
is puts me in mind of that queſtion, *viz.* “ Whe-
her is a ſquare half foot, or half a foot ſquare moſt?”
ave heard ſeverals ſay they were both alike ; but
t was a miſtake : for an half foot ſquare, ſuper-
al meaſure, is but the half of a ſquare half foot;
, if ſolid, it is but one fourth of it.

he Scots ell, according to ſeveral acts of parlia-
nt, is three foot one inch, or 37 inches long : ſix
long multiplied by 6 ells broad, is 36, a fall ſquare :
alls in length and 4 in breadth, is 40, a rood ſquare :
alls in length and 4 in breadth, is 160, an acre.
the table of ſuperficial ſquare meaſure. And
e who deſire long meaſure, ſix ells long is a fall,
y falls a furlong, eight furlongs a mile. See the
le.

Table of ſuperfi-
ial Square Mea-
ure according to
COTLAND.

| | | | |
|---|---|---|---|
| es | 4 | 160 | 5760 |
| | Rood | 40 | 1440 |
| | | Falls | 36 |
| | | | Ells |

A Table of ſuperficial Long Meaſure according to SCOTLAND.

| | | | |
|---|---|---|---|
| Ells | | | |
| 6 | Falls | | |
| 240 | 40 | Furl. | |
| 1920 | 320 | 8 | Miles |

We differ in meaſuring land from the Engliſh, the fall differs from the pole: our fall is 6 ells, 18 and an half foot: their pole is 5 and an h yards, or 16 and an half foot.

By what is ſaid above, I hope you will know wh with to meaſure: it only remains then that you kn how to meaſure, of which anon.

II. In meaſuring all ſuperficies, we take notice o ly of the breadth and length; but of ſolids, of t breadth, length, and depth. To inſtance in a fe and firſt of ſome ſuperficial figures, a geometri ſquare, ſee fig. 18. is meaſured by multiplying o ſide into itſelf, *viz.* *a b* or *c e*, or *a c* or *b e*, which h is 30 and an half falls. In your workings I wo adviſe you to make uſe of decimal arithmetic; b cauſe thereby you may work whole numbers and fr tions together with great eaſe and quickneſs; and y may reduce ordinary fractions into decimals, by m tiplying the numerator by 100 or 1000, *&c.* and viding the product by the denominator, ſo ſhall t one fourth of any thing, be 25; and the half, 5; a the three fourth, 75: therefore multiply 30.5. into itſelf, the product is 930.25. which is 930 falls, and one fourth of a fall; ſee the example. And when you multiply decimally, whatever fractions are in the multiplicand and multiplicator, cut them off after addition; which, if there be any, will be a fraction, as here you ſee two cut off, *viz.* 25. which is one fourth of 100, the fall being h into 100 parts, the integer of 25: and when you vide decimally, as whole numbers and fractions whole numbers, put ſtill a daſh betwixt the wh number and fraction, and notice how often you get your diviſor placed under the whole numbers of y

```
 3
 3
———
 1
91
———
93
```

divide

dend, and juſt ſo many whole numbers will be in quotient, and the reſt fractions: or if you divide le and fractions, by whole and fractions, notice many times you may place the whole numbers of diviſor under whole numbers of the dividend, *&c.* or ou divide whole numbers, by whole and fractions, tever fractions ſhall be in the diviſor, add ſo many ers to the dividend, and do as before.

ou may reduce this, or any other plot, into acres, ividing by 160, the falls in one acre, and the pro- here will be 5 acres, 130 , and one fourth of a fall. if you would further know t this fraction (25) is in ſay, if 100 be equal to the ells in one fall; what equal unto? Multiply the umber by the 3d, and di- by the firſt, and the anſwer be 9 ells: ſee it wrought.

|  |  |  |
|---|---|---|
|  | 36 | 1 |
|  | 25 | 43 |
| 900(9 | 180 | 930(5 |
| 100 | 72 | 160 |
|  | 900 |  |

oreover, falls may be reduced into poles, and s into falls; or Scots meaſure into Engliſh, or iſh into Scots: one ſuperficies is to another, as quares of their like ſides; therefore, as the ſquare 6.5. the Engliſh, is to the ſquare of 18.5. the s; ſo is the contents in Scots acres or falls, to ontents in Engliſh acres or poles.

ample, The ſquare of 16.5. *i. e.* 16.5. multi- into itſelf, is 272.25. and the ſquare of 18.5. 2.25. And as 272.25. is to 342.25; ſo is 930.25. ontents of the ſaid plot in falls or Scots mea- to 1169.43. one fourth almoſt, its content in poles ngliſh meaſure. This I thought fit to mention, thoſe ſee who know not the difference betwixt ngliſh meaſure and ours.

2*do,* Meaſure an oblong ſquare or parallelogram, ſ fig. 19. by multiplying the breadth by the lengt *a d* or *b c* is its length, and *a b* or *d c* its breadth.

3*tio,* A triangle, ſee fig. 20. All triangles are m ſured by multiplying the whole baſe, by half the pe pendicular, or whole perpendicular by half the baſ *a b* is the baſe, and *i c* the perpendicular: or witho the perpendicular at all, add up all the ſides, and ta half the ſum; from this half ſum take every ſi which call the three differences; multiply theſe th differences and the half ſum continually together, ſquare-root of the laſt product ſhall be the area of triangle.

4*to,* A trapezium, ſee fig. 21. is reduced into two angles, and meaſured accordingly.

5*to,* And ſo is any irregular ſtraight lined figure; if any ſide of it be crooked, draw a line that leave out as much as it takes in; but if it cannot meaſured within, becauſe of obſtructions, then add the out-ſide, till you reduce it into a ſquare, and, a multiplication, ſubtract what was added, the rem der ſhall be its area.

6*to,* A circle, ſee fig. 22. is near equal to a ſqu made of half the diameter, and half the circum ence or periphery; and therefore is meaſured by m tiplying *a q c o b,* the ſemi-circumference, by *n d c,* the ſemi-diameter: And having any one given, may find the other by the rule of proportion thus: The loweſt number is, as 7 is to 22; ſo is the meter to the circumference; or as 22 is to 7; ſo is circumference to the diameter: Or thus, as 1 is 3.1416; ſo is the diameter to the circumference; as 3.1416 is to 1; ſo is the circumference to the meter: or as 113 is to 355; ſo is the diameter to periphery: or as 355 is to 113; ſo is the periphery the diameter.

In this the diameter is 63 falls, and as 7 is to 22;
is 63, the diameter, to 198, the periphery. Take
alf of the periphery which is 99, and multiply by
lf the diameter, which is 31.5. and the product
3118.5. or as 28 is to 22, or 14 to 11, or 1 to
5,399; ſo is the ſquare of the diameter to the area
the circle: or as 22 is to 28, or 11 to 14, or 355
452, or 1, to 1.273239; ſo is the area of the
rcle to the ſquare of its diameter: as 1 is to 282095;
is the circle to the root of a ſquare, equal to the
ea of a circle: as 1 is to 707107; ſo is the diame-
r to the root of a ſquare to be inſcribed in a circle:
1 is to 225072; ſo is the periphery to the root
the inſcribed ſquare in the circle: and as 1 is to
6227; ſo is the diameter to the root of a ſquare e-
al to the circle, which is the ſquaring of a circle.

*7mo*, The ſemi-circle is meaſured by multiplying the
dius or ſemi-diameter by one fourth of the circum-
ence of the whole circle.

*8vo*, The quadrant or one fourth of the circle, by
ltiplying the radius by half of that arch-line, which
one eighth of the periphery.

*9no*, To meaſure the ſegment of a circle, as *d i o c*,
t draw its radius from *d* to *o*, which conſtitutes the
tor *d o c*: and as the quadrant hath 90 degrees; ſo
s ſector hath 40: therefore ſay, as 90 is to the
tent of the quadrant; ſo is 40 to the content of
ſector: the triangle *d o i* being ſubtracted from
ſector's content, remains half the ſegment; that
bled, is the area of the whole.

To work geometrically, find the length of its arch-
thus; ſee fig. 23. divide the chord-line *a d c*, of
t arch into four equal parts, ſet one of theſe from
*i* on the chord-line, and one of them from the
*le* at *a* to *o* in the arch-line; then draw the line *o i*,
ch line is half the length of the arch-line, *a o b c*; but if

the part of a circle be greater than a ſemicircle, th divide the arch-line into two equal parts, and find t length of one of theſe, which doubled, is half t length of the whole; here take the half of the ar line of fig. 23. and multiply it by its radius *e b*, t product is the area of the ſegment *a b c d* and t triangle *a c e*, which triangle muſt be ſubtracted the from, and the remainder is the area of the ſe ment.

10*mo*, If you would meaſure the oval, then o ſerve the rules in meaſuring the ſegment, ſeeing t oval is made of ſegments; if it be from two cent then it is but two ſegments; if from four, then it four ſegments and a quadrangle.

11*mo*, Regular polygons, are ſuch figures as c ſiſt of equal ſides and angles; and which may be ſcribed in a circle, or circumſcribed about a cir whether pentagon, hexagon, heptagon, octagon, nagon, decagon, dodecagon; for any of theſe t half the compaſs about, and the perpendicular dra from the centre to the middle of one of the ſi multiply the one by the other, and that gives the c tent.

12*mo*, To meaſure any irregular figure, conſiſt of ſtraight and circular lines, the arches and an bending inwards: if you cannot reduce them ſome of the figures above-mentioned within i you may do it by drawing lines without; and you have multiplied, ſubtract what was added, ther ſegments or others, and there will remain th rea of the figure propoſed.

Mountains and valleys are beſt reduced into angles, and ſo meaſured; for altho' they make r ſpherical than plain triangles, yet the way of men tion differs not: but as in plain trapezias, there a ther ways of meaſuring than by triangles, as t

e half of both ends and ſides added for the mean
eadth and length : ſo for mounts and valleys, mea-
re the circuit or baſe part of the mountain and its
p, add them together, and take half that ſum for
e length : do ſo with the aſcent, or going up from
ot to top, of two ſides of the hill; add the meaſure
f the longeſt and ſhorteſt ſide together, taking the
alf thereof for the breadth, and multiply the one by
e other, that gives the ſuperficies of the mount or
ll.

And as you meaſured the compaſs of the foot of
e hill, ſo muſt you meaſure the circuit or compaſs of
e height of the valley or glen; and as you meaſured
e top of the mountain, ſo muſt you the bottom of
e depth of the valley; add them together, and take
alf thereof for the breadth : likeways as you mea-
red the aſcent of both ſides of the hill, ſo muſt you
e deſcent, or going down of both ſides, to the bot-
m of the valley; add them together, and take half
r the length, and ſo multiply as before.

III. Altho' I have ſaid enough anent meaſuring of
nd, yet there is much more required in dividing and
ying out the ſame.

The firſt time I ſaw the need of it, was in making
avenue of great length, which croſſed a march ſe-
ral times, which took in ſeveral pieces of land, and
ſt out others : but none of them being equal, neither
ſhape nor proportion, I behoved to meaſure both,
d then cut off ſo much as might balance, and that
m parts aſſigned.

As if, from the triangle *a b c*, fig. 24. which con-
ins 870 falls ſquare, you would cut off 300 falls
uare, *firſt*, finding the baſe *c b* of this triangle to
58 falls long; ſay, if 870 falls, the whole plot,
ve 58 for its baſe; what will 300, the part I deſire
cut off, have for its baſe.

*Anſwer*, 20; therefore meaſure 20 falls along the baſe from one end thereof, as from *b* to *d*, then draw the line *a d*, ſo ſhall *a b d* contain 300 falls, and *a d c* 570. Or,

870 : 58 : : 300
1 58
——
2400
1500
——
870)17400(2

If it be required to take off a part from a triangle, according to any proportion given, by a line drawn parallel to any of the ſides aſſigned; let *a b c*, fig. 25. be a triangle containing 7 acres, or 1120 falls; and it is deſired that 2 acres be cut off by a line drawn parallel to *a c*. Its baſe-line is 57 falls, which you muſt divide in the proportion of 5 to 2 in the point *d*; then ſeek the mean proportional between *b d* 42, and *b c* 57, as *b f* 48 $\frac{80}{97}$. But having in the end of this chap. ſhewed how to find mean proportionals arithmetically, I ſhall here ſhew you how to do geometrically.

Therefore deſcribe the ſemicircle *b e c*, and at the point *d* on the baſe-line, raiſe the perpendicular *d e* cutting the arch-line in *e*; then ſet the length of *b e*, which is the mean proportional from *b*, on the diameter line, and that will reach to the point *f*. Now, from the point at *f* take the neareſt diſtance to the line *c a*, and ſet that diſtance ſquare off at *a* to G, draw the line G *f* exactly parallel to *a c*, ſo will the triangle G *b f* be five acres, and G *f c a* two acres, the thing propounded.

If you would cut off ſome part from a ſquare parallel to one ſide, you need only meaſure that ſide on which you deſign to take it off, and divide the parts you are to take off thereby, and the quotient ſhall tell how much you muſt ſet off. Example, fig. 19 is an oblong ſquare, denominated *a b c d*. I deſire three acres, or 480 falls, cut off at, and parallel to the ſide

*a b*,

*b*, which ſide is 32 falls; divide 480, the part you
e to cut off, by 32, the ſide of the ſquare, and the
otient will be 15; therefore ſet off 15 falls from *a* to
and from *b* to *f*, and the ſquare *a b f e* is 3 acres,
was required.

But if its ſides did not ſquare off, as the trapezium,
. 21. reduce the trapezium into a triangle, and di-
de the baſe into ſo many equal or unequal parts as you
uld have the trapezium into; then find a mean pro-
rtional betwixt the extreme points of the baſe, and
ery particular point in the baſe; from which means
aw lines through the trapezium parallel to the ſide
ſigned, which may anſwer what is required. Or,

A more ready way to work on ground, is to find
e mid-line of the ground you are to cut off, and di-
de thereby, &c. But the queſtion is, how to effect
is? You may firſt ſet off the whole in two triangles,
z. If you would cut off 160 falls at the end *a b* of
g. 21. then ſet off the half thereof at the angle *c a b*,
cut the line *a c* by the firſt; for you will find,
at as the triangle *c a b* contains 364 falls, ſo muſt
ou go $7\frac{2}{3}$ from *a* to *e* on that baſe, to draw the line
*e*, that cuts off the triangle *a b e*, containing 80
lls. Likewiſe as the triangle *d e b* contains 165 one
alf, ſo muſt you go from *b* to *f*, that *a b e f* may con-
in 160 falls: only the line *e f* is not parallel to
*b*; therefore as *b f* is five falls longer than *a e*, ſet
and an half falls outwards from *e* to G, and as much
nwards from *f* to *h*, and draw the line G *h* parallel to
*b*, and ſo leave as much out as it takes in; then find
he length of the mid-line betwixt *a b*, and G *h*, *viz.*
*k*, which is 16, and by the ſame divide 160, the quo-
ient ſhall be 10. And that will reach from *a* to G,
nd from *b* to *h*, ſo as to cut off 160 falls at, and pa-
allel to, the end *a b*, by the line G *h*, as was deſired.

It is required to divide the pentagon, fig. 26. i two equal parts from the angle at *a*. The whole gure is ten acres, one rood, and twelve falls, that 1652 falls, then the half is 826, and the triangle *a* is but 441, which wants 385 of the half; therefore t 385 from the triangle *a c d*, by the firſt rule, and th will be added the triangle *a c f* to the triangle *a* which will divide the figure into two equal parts, thing required.

If I am deſired to ſet off a third part of the hexag fig. 28. by a line drawn from the point *g* : the wh plot is 45 acres, and 145 falls, or 7345 falls; the third therefore is 2448, and the trapezium *g e f* but 2041.875, which wants 407 falls, and the f tion, which is but a little more than five ſixths of a f wherefore I muſt take 407.875. from the tria G *d e*, by the firſt; thus, if 2523.50. the conten the triangle G *d e*, have for its baſe *e d*, 62 falls, far muſt I go on the ſame to get off 407.875? *Anſ* 10. $\frac{5325}{25235}$ that is, 10 falls, and about one fifth fall; the which being ſet from *e* to *h*, to draw the G *h*, cuts off the one third of this irregular hexa as was deſired.

If you were deſired to lay out any number of a at pleaſure into a geometrical ſquare, you need reduce them into falls, and extract the ſquare thereof, as at the end of this chapter, which is length of one ſide, and ſo meaſure, or ſet off chain. Or,

If you would have it lie in a parallelogram or long ſquare, you may lay it out; as I directed for ting off ſome part from a ſquare parallel to one for knowing how many falls you would have into oblong ſquare, you may make a ſide at pleaſur not already confined to one, and divide thereby taught. Or,

Fig. 18.

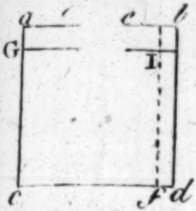


Fig. 19. page 54

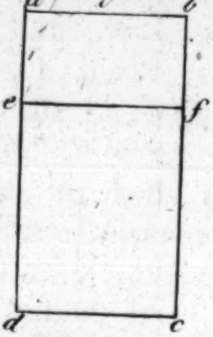


Fig. 20.

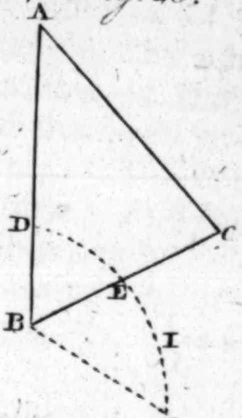


Fig. 21.

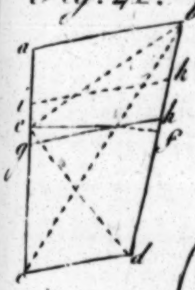


Fig. 22.

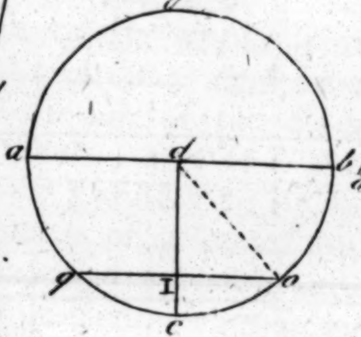


Fig. 23.

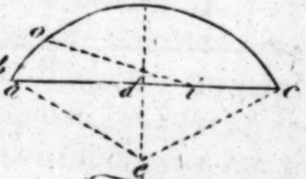


Fig. 24.

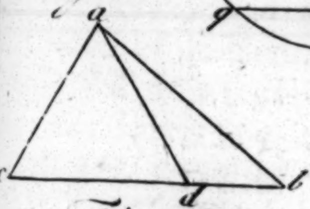


Fig. 25.

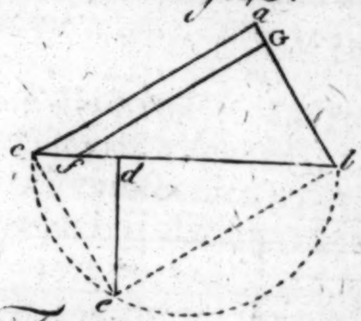


Fig. 26.

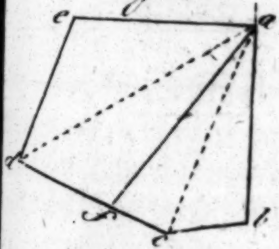


Fig. 27.

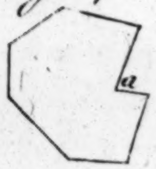
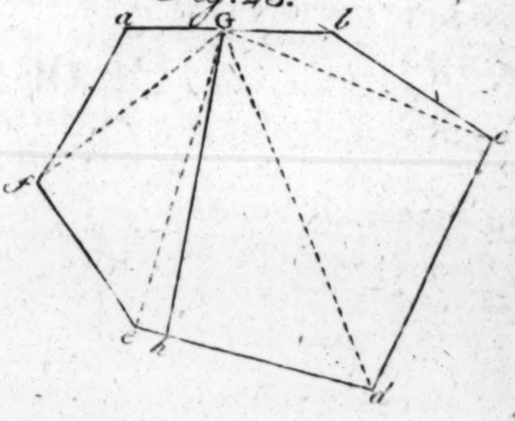


Fig. 28.



21 OC 59

If you would make a triangle to contain ſo many
cres, roods, or falls, double the number of falls;
hen take for the baſe of your triangle, any number
t pleaſure, by which divide the double of the falls
o be brought into the triangle, and the quotient ſhall
e the perpendicular to that triangle, whoſe content
hall be the number of falls propoſed. And herein
nſiſts the reduction of figures arithmetically.

IV. Perhaps you may have occaſion to meaſure the
lidity of earth, timber, trees, ſtones, *&c.* Now, to
nd the ſuperficies of ſolids,

*Firſt*, For the ſphere or globe, multiply its whole
rcumference by its whole diameter, and that gives
s ſuperficial content: And as 7 is to 22, or 113 to
55; ſo is the ſquare of the diameter to the ſuperfi-
es of the ſphere; and ſo is the diameter multiplied
the axis of a cylinder to its ſuperficies; and ſo is
e half diameter of a cone, multiplied into its ſide,
the ſuperficies of a cone; and ſo is the ſquare of
e chord of half the ſegment of a ſphere to the ſu-
rficies of that ſegment.

As 1 is to 1.772454; ſo is the diameter to the root
a ſquare, equal to the ſuperficies of a ſphere. Or,
1 is to 564189; ſo is the circumference to the
ot of a ſquare, that ſhall be equal to the ſuperficies
the ſphere.

V. As ſuperficial meaſure hath 144 inches ſquare in
e foot, ſo ſolid meaſure hath 1728: every ſolid foot
like a dye, for what it wants either in breadth or
ckneſs, it muſt have in length; for 12 times 12 is
4, and 12 times 144 is 1728, the cube-ſquare inches
a cube-ſquare foot: therefore,

In meaſuring a ſquare ſolid, multiply its length by
breadth, and that product by its depth.

To meaſure a cylinder, ſuch as a roller, multip the ſemi-diameter by the ſemi-circumference, and th by the length.

To meaſure a cone, *viz.* it hath a circular baſe, a ends in a ſharp point, take the ſuperficial content the baſe, and multiply by one third of the altitude height.

To meaſure a pyramid, *viz.* it hath an angu baſe, and ends in a ſharp point, make uſe of the rule.

To meaſure a ſphere or globe, *viz.* a ſolid figure very where equi-diſtant from the center, cube that ameter, and multiply that by 11, then divide the p duct by 21, the quotient is the ſolid content of ſphere.

As 1 is to 80604; ſo is the diameter to the root a cube equal to the ſphere. Or, as 1 is to 256556 is the circumference to the root-cube of a ſolid, e to the ſphere.

As 1 is to 523599; ſo is the cube of the diam to the ſphere. Or, as 1 is to 909856; ſo is the ſph to the cube of the diameter.

As 1 is to .016887; ſo is the cube of the circu rence to the ſphere: or, as 1 is to 59217629; ſ the ſphere to the cube of the circumference.

As 42 is to 22: or, 1 to .5236, ſo is the diam cubed to the ſolidity of the ſphere: or, as 22 is to or, 1 to .190986; ſo is the ſolidity of the ſphere t diameter cubed.

As 28 is to 22: or, 14 to 11: or, 1 to .785399 is the ſquare of the diameter of a cylinder, multi by its ſide, to the ſolidity of the cylinder; and the ſquare of the diameter of a cone, multiplied b third of its axis, to the ſolidity of the cone.

As 1 is to 25.1327; ſo is the diameter cubed cylinder.

o meaſure a regular polygon, as a piece of timber ed into 5, 6, 7, 8, *&c.* equal ſides, with both ends e, multiply the ſemi-circumference by the radius or -diameter, and that product by the length.

o meaſure a truncns, *viz.* a cylinder that leans, the ſuperficies of the circle, and adding the longer ſhorter ſides of the truncus, take the half for the ht.

he ſector of a ſphere is meaſured by multiplying uperficies ſpherical by one third of the height.

he ſegment of a ſphere; meaſure it as a ſector, ſubtract from the ſector the ſolidity of a cone, ſe apex is in the center, and baſe the area of the ent.

he ſolidity of a ſpheroid is got by multiplying the eſt circle into two thirds of the axis, about which pheroid is made.

e ſolidity of the trunk of a ſpheroid, cut off with ircles at right angles, with the baſe, ſuch as our caſks are, is got by adding two thirds of the area e circle, at the bung, or middle, together, and plying the ſame by the length.

egular diſorderly ſolids, are meaſured by help of in a prepared veſſel, exactly cubical, ſo large as y contain it, according to Archimedes: put the into the veſſel, pour in ſo much water as may juſt the ſame, and make a mark where the ſuperficies water touched the veſſel; take out the ſame irregudy, and make a ſecond mark where the ſuperficies he ſide of the veſſel; then take the diſtance be- the two marks, in inches and parts, which mul- by the ſquare of the ſide of the prepared veſſel, hat product ſhall be the ſolidity of the irregular ſought.

If you would meaſure any ſuperficies by the of logarithms, then ſet down the logarithm of the length and breadth, add them together, and wh ever their ſum be, the number anſwering thereto, is area or ſuperficial content. Which, if they be fa and you deſire to reduce them into acres, then ou the logarithm thereof, ſubtract the logarithm of the falls in one acre, and there ſhall remain the lo rithm of the content in acres. Or,

If you would meaſure ſolids by the table, ſet do the logarithms of its length, breadth, and depth; them together, and the abſolute number anſwering logarithm, is the ſolid content required.

Alſo, by the table you may extract the ſquare of any plot, field, or other ſuperficies, with great and quickneſs: thus,

Take the half of the logarithm of the given num whoſe root is required, and the number anſwering logarithm, is the ſquare-root ſought. Or,

For extraction of the cube-root of any ſolid, the third part of the logarithm of the given num whoſe root is required, and the abſolute number ſwering thereto, is the cube-root deſired.

And to find a mean proportional between two bers given by the table, is to add the logarithms of together, and take half: as if you would have mean betwixt 40.5 and 72, thus,

The logarithm of 40.5, is . . 1.60
The logarithm of 72, is . . 1.85

The ſums added . . . . 3.46

The half of the logarithm is . 1.73

The number anſwering this logarithm is 54, fo mean proportional.

To find 2, 3, 4, 5, *&c.* means between any numbers, take their difference, and divide it number more by one, than the number of means as, if 8 means, divide by 3, *&c.* this logarithmeti- quotient added to the laſt, finds the firſt mean next *&c.* as, if you would have three mean proportion- betwixt 4 and 64,

The logarithm of 64 is . . . . 1.806180
The logarithm of 4 is . . . . 0.602060

The difference is . . . . . 1.204120

The fourth thereof is 0.301030, which, being ad- l to the logarithm of 4, makes 0.903090, the loga- m of 8, for the firſt mean; again added to this laſt, es 1.204120, the logarithm of 16, and added to this, es 1.505150, the logarithm of 32, which 8, 16, 32, the 3 means betwixt 4 and 64.

But becauſe the extraction of the ſquare-root is ſo dful to be known, I ſhall demonſtrate the ſame.

Example, If you were to find the ſquare- t of 576, ſuppoſing it the ſquare of 18. make firſt a daſh at every other re, beginning always at the firſt to- rds the right hand, *viz.* at 6 and 5; n juſt ſo many figures will be in the tient or root: Then ſay, what is the root of 5? *ſwer,* 2 is the neareſt; therefore write 2 in the quo- nt: and multiply the ſame, ſaying 2 times 2 is 4, te down that under the 5, and ſubtract it there- m, ſaying, 4 from 5, there remains one; thus e you 20, the ſquare-root of G *i c f;* conſidering t there is yet one figure to follow, and now you t the ſquare root of the two oblong ſquares, *viz.* G *h*, and *e b f d*, out of which you muſt ſubtract little ſquare *e b i h;* therefore double your quotient root of the ſquare G *i c f*, ſaying 2 times 2 is 4, te this down for your diviſor, one figure forward, *viz.*

11
576(24
446
1

*viz.* under 17; and uſe common diviſion, ſaying, H often can we get 4 out of 17? *Anſwer*, 4 tim write that in the quotient, and ſay, 4 times 4 is that ſubtracted from 17, remains 1: Thus have 4, the root of the oblong ſquare, out of which tract the little ſquare once, becauſe you have it tw by the former doubling the oblong ſquare; theref multiply the ſides of the little ſquare, *viz.* 4 in itſ that makes 16; ſubtract the ſame from 16, and th remains nothing; ſo 24 is the ſquare root or ſide whoſe ſquare is 576.

Example 2d, If the ſquare of this plot be 5431 make the daſhes as before, *viz.* under 9, 1, 4, and What is the ſquare of 54? the daſhes ſo direct, not to 5; therefore mind the uſefulneſs of them: N the neareſt ſquare-root of 54 is 7: But as in diviſion, ſo you muſt look if you will get the double thereof out of the remainders and the little ſquare too; if you mind this, you cannot go wrong. But upon trial, I find it will work ſo; therefore ſet 7 in the quotient, and multiply the ſame, it makes 49; write that down under 54; ſubtract, and there remain This ſhows that the root of the large ſquare is 7 conſider that there is yet two figures to follow, as pears by the three daſhes, therefore double your q tient, that makes 14, and this is the length of the oblong ſquares, place the ſame as in diviſion, and How often can we get 14 out of 53? *Anſwer*, 3 tim and 11 remaining: Now ſubtract the little ſqu whoſe ſide is 3, thus 3 times three is nine, from 1 there remains 102. Then there is the root of ot two oblong ſquares wanting; therefore double whole quotient *a b*, 73, that makes 146; place ſame as before for diviſion, and ſay, How often

```
   13
  204
 15124
543169(73
  .  . .
494969
  1144
```

n we get 146 out of 1026 ? or gradually, How often one in ten ? we get 9 ones in ten, but not 9 fours 12, which will remain. Then try if we can have : no, therefore take 7 ; and put in the quotient, as efore in common diviſion, *viz.* 7 times one from 10, mains 3 ; and 7 times 4 from 32, remains 4 ; and times 6 from 46, remains 4. Laſtly, ſubtract the ttle ſquare, *viz.* 7 times 7 from 49, there remains noing ; ſo the ſquare-root of 543169 is 737.

And if the number be ever ſo great, you may obrve, That the firſt operation conſiſts of three parts, e. 1*mo*, Finding the root of the great ſquare : 2*do*, he root of the oblongs, by doubling the quotient, nd uſing common diviſion: 3*tio*, Subtracting the ttle ſquare, for the reaſons above demonſtrated. The cond operation, if there be more than one, as in is laſt example, conſiſts of two parts, *viz.* 1*mo*, he doubling the whole quotient for your diviſor, by hich you divide your dividend, as in common divion. 2*do*, The ſubtracting the little ſquare, whereof e laſt figure in the quotient is always the root; and enceforth in every operation, if ever ſo many, you uſt always proceed as in the ſecond operation.

But to find the ſquare-root of a numr conſiſting of whole numbers and actions, as 930.25. the ſquare of fig. 3. work as if all were whole numbers, before, until one figure of your divir come under the fraction of your dividend, and en the reſt of the quotient is a fraction, as is plain by e example.

930.25(30.5
96005
62

But to find the root of a number, that is not a uare number, as 19, four is the near, and there remains 3. Now how to ow the denominator of this numerar, is to double the quotient, and add

3
19)$4\frac{3}{9}$
16

one to it, and that is always the denominator to a fraction happening in roots: here the root of 19 i and three ninths.

I have given you the geometrical demonſtration the ſquare-root, which ſhews the reaſon of its ari metical operation; and this I could never find in a book.

I confeſs, I need to apologize for theſe and the l digreſſions, but the earneſt deſire of ſeverals for me to it.

# THE

# SCOTS GARDENER.

## PART II.

## Of the Culture of PLANTS.

## CHAP. I.

### f the ſeveral Ways of PROPAGATION.

### SECT. I.

AM not to deſcribe the varieties in the tribes and kindreds of plants, ſeeing I am not now writing an herbal; but only what is moſt material to their pagation and improvement: wherefore I ſhall w,

n general, the ſeveral ways of propagation; and n particularly ſome of the moſt uſeful.

I. The ſeveral ways of increaſing them; and theſe

mo, By ſeeds, keys, kirnels, nuts, ſtones.
do, By off-ſets, ſuckers, and ſlivings taken from the her-plant.
tio, By cuttings, ſtems, and ſlips, ſet without roots.
to, By laying the branch of a growing plant down the earth.

*5to*, By carrying up ſoil to it, where it will no bend down.

*6to*, By various ways of graftings.

*7mo*, By ſeveral ways of inoculation.

The buſineſs of this chapter is, to ſhew the manne and time of performing each of theſe ways.

III. And, *firſt*, by ſeeds: chuſe them from the fair plants, full ripe, the day fair, and plants dry. La them in the ſun and open air a little, ſome for rubbin out, others for winning in their huſks: and, as yo ſhould not ſow fruits, kernels, nuts or ſtones, wit their fleſhy part on, but eat, or rub it off by rollin in ſand, and then dry them a little; ſo neither waſ wet or ſteep them: neither keep any long after the are ripe. Moſt part of them will keep till ſpring, bu then many will lie till the next, eſpecially ſtony ſeed berries and kernels: I do not mean aſh, holly, yew mezerion, hawthorn, *&c.* which naturaly lie a yea longer, altho' ſown immediately when garthered; y even ſome of theſe, namely, the holly, will lie ſome times a year longer than their uſual time, if the fleſh part be not rubbed off.

To cover the ſeed with the mould; of this the are ſeveral models, according to the nature of th ſeed, ſoil, ſeaſon or fancy, either to ſow the groun and turn the ſeed in under the furrow, or by drawin trenches in the ſoil, and then drawing the earth ver them with a how; or ſowing the bed, ready dre and hacking in the ſeed with the ſame inſtrument; by harrowing, raking with a rake, or drawing buſh over the ſowed ground to cover the ſeed; or to p off the ſurface of the whole bed with the rake-hea and ſow thereon; then draw on the mould again wi the ſame; and having caſt up the furrows with a ſh vel, ſmoothe the bed with the rake; or make drills b

lin

nes, in made-up beds, ſow and cover the ſame with
e rake-head, not diſordering the ranks; or to ſet the
ngle ſeeds with ſticks by lines, or to ſow the bed,
nd then to ſift fine mould thereon, *&c.*

Sow the ſtrong and hardy deeper than the ſmall and
nder, and ſow ebber at ſpring than before winter,
nd deeper in a light than a ſtiff ſoil.

Altho' I uſe for the moſt part to plant and ſow e-
ry ſpecies by themſelves, yet you may ſometimes
e mixtures, as carrots and radiſh in one bed; be-
uſe the radiſh may be gone before the carrots re-
uire much room: among new ſet liquorice, ſow o-
ons and lettice; and you may ſow radiſh, lettice,
rſly and carrots together, gathering each in their
aſons: the parſnips will ſtay till winter; and drop
atrave in your onion beds, to ſtay winter, after o-
ons are gone: alſo beatrave and skirrets, at a con-
erable diſtance in the intervals of planted artichokes;
ſo at a great diſtance among cabbages, or in the edge
the furrows of other beds.

The moſt natural time for ſowing is, when the ſeeds,
their own accord, fall to the ground; neverthe-
ſs, tho' many do well at this ſeaſon, as ſtony-ſeeds,
d ſuch as can endure winter, yet the tender, which
e many with us, do beſt in the ſpring; but for con-
nience, we ſow at ſeveral other ſeaſons, as in ſum-
er, at which time they require watering and ſhade;
d in autumn, which is the only ſeaſon for ſome,
hich, if tender, require defence and ſhelter; nor
n we have others early at ſpring without hot-beds,
hich is required eſpecially by ſuch as come not to
rfection in our ſhort ſummer.

Endeavour to ſow when the ſoil is in good temper:
hot furrow is good, but clay-grounds will not har-
w or rake when new delved or plowed, which, when

expoſed ſome time to air, froſt, ſun and ſhowers, d crumble and fall tender ; hence ought ſuch to be p pared by fallowing ; ſee more particularly the man and ſeaſon for each ſort in their reſpective chapt following.

IV. Suckers are theſe which grow, run, ſpring or about the mother-plant, whereof are made off-ſe by ſevering or parting them therefrom.

Take off theſe on trees and ſhrubs, with a viol but cleanly pull; be careful of bulbous roots and a monies, that you wound not the mother-plant.

To force ſuch as are unapt to put forth ſuckers turally, you may bare the root of thoſe of a woo ſubſtance; cut it into the pith, ſlit it down a little, put in a ſtick to keep the gape open; level in earth again, ſo ſhall the ſlip raiſed ſpring, and ſo mu the better, if there was an eye immediately below cut. When the fibres are grown, cut off this pl to live by itſelf.

Another way is to cut the root through, a little ſtance from the tree, with a cleanly ſlop downwar and raiſe up the but-end of the root ſo cut off, til be a little above the ſurface; as for root-grafti hereafter to be deſcribed, level in and tread the ea again, ſo ſhall the piece left at the tree ſend fo young roots, and the root ſo cut and raiſed ſend a top.

Rich free earth for bulbs and other roots, will a them to put forth ſuckers.

Cutting the tops of fibrous rooted herbs, in grow time before they flower, will help them to off-ſet, to laſt long too.

The ſeaſon for ſevering off-ſets of hardy trees t loſe the leaf, is in the latter end of October, and ginning of November; although you may have th alſo any time till March, if the weather is open.

For young tender trees, with hardy greens, let the
inter froſt be over, and before the ſap riſe. April is
eſt for greens.

Bulbous and tuberous roots, when they have done
ringing, *i. e.* their ſtalks and leaves beginning to
ither.

All fibrous rooted herbs, when ſpringing, and be-
re they run up to flower; altho' you may plant ma-
y after the flower is paſt, ſtalks and leaves cut, and
ey ſpringing afreſh. But the firſt ſpring is beſt.

If drought, water ſhrubs and fibrous rooted plants
on their firſt planting; at leaſt ſhade them from the
nſuing ſcorchings, by covering the ſurface with ſome
egetable or litter, and water the ſame throughly if
eedful.

And though you muſt water fibrous and ſome bul-
ous roots in drought, once in two or three days; yet
e ſparing, and defend them from too much rain.

V. To propagate by cuttings, is to cut off the
ranch or ſtem of a plant, and to ſet it in the earth
ithout roots.

Strip it of leaves and branches, twiſt the branch, if
is not too brittle; plant deeper than theſe with
ots, and in a rich and moiſt ſoil, keeping it watered
nd ſhaded, until rooted; cut off their tops, except
reens, as if your cutting be twelve inches long, let
ine be under, and three above, ground.

The better to effect their rooting, if a bending ſub-
ance, as yew, quince, *&c.* twiſt their ends a little:
tender plants of great pith, as jeſamines, july-flow-
rs, *&c.* cut only at a joint or knot, and plant them,
nd cover theſe cuttings, eſpecially july-flowers or
inks, with bell-glaſſes, and in ſun-ſhine ſhade them,
or ſuffer them to have any air until they are well
ooted and are growing; for air rots cuttings, but it is
therways in layers. If large ſtems of pithy trees, or
poplars,

poplars, *&c.* ſharp their ends down to a point, reſ ving the bark whole on one ſide.

If ſtock july-flowers ſlit the bark near the end ſeveral parts round the ſtem, fold up the bark ſo c and, taking the peel'd part cloſe off, plant the ſa with this bark, ſpread as you do a root.

The time of planting cuttings is, if trees and ſhru a little before they ſpring; and if herbs, when ſpri ing, as above for off-ſets; and let the ſtems of ju flowers and wall-flowers be well ſhot, *i. e.* ſo thing firm, and take ſuch as have not had a flower

VI. To increaſe by laying, is to bend down ſo branch to the ground, and, with a hooked ſtick thr into the ground, ſtay the ſame in its place, and co with earth of deepneſs as you ſee fit: let the ſoil good, watered, and ſhaded in drought from ſcorching ſun, and ſheltered in winter, if needful.

To force their rooting, if july-flowers, prune the under and withered leaves, and cut it at a joint i the pith, *i. e.* half way through, and ſlit it up to next joint; thruſt down the cut part gently into ground, making it faſt, and cover it as before. trees and ſhrubs, prick the rind full of holes at place interred, or cut away the bark round at the ſ place; but if the branch be ſmall, uſe it as july-fl ers, and if any refuſe, bind them hard and faſt ab the ſlit with a piece of pack-thread or wire, to the ſap in its courſe, that it may provide for root Cut off all your tops as you lay them, except gre and ſome very pithy trees.

The time for laying all trees and ſhrubs that the leaf, is October, as alſo March if ſecured f drought: for all greens in April, which there muſt be ſhaded: for july-flowers in March, Apri July.

The trees or ſhrubs will be rooted that time twelve
nths, at which time tranſplant them. The july-
vers if laid in June, may be tranſplanted or taken off
eptember.

II. Circumpoſition is uſed in all caſes, as laying, ex-
only that the earth muſt be raiſed up to the branch,
auſe it will not bend down to it: therefore faſten
t, baſket, old hat, or the like, on the tree, by a
e or ſome ſupporter; let it have a hole in its bot-
, through which you muſt put the branch to be pro-
ted, and then fill the pot with rich earth, having
red the branch, as before, to cauſe it root, and
r it often: willow earth, or rotten willow-ſticks,
e bottom of the pot, helps to retain the moiſture.
ve effected this with clay and cows dung well mixt,
part of the bark has been taken off round, clapt
t with a double or triple ſwaddling of ſtraw or hay
s.

his is a mid-ſummer, as well as a ſpring work, and
notable for propagating ſuch as can ſcarcely be o-
wiſe obtained.

II. Graffing is to take a ſcion or twig of a tree,
place into another, called a ſtock, fit to receive
ame, that the inward bark or rind of both may
and the ſaps unite, *&c.* Whereof there are ſeveral
, as,

*o*, Of graffing in the clift; ſaw off the head of
ſtock in a ſmooth place, about half a foot above
nd, for dwarfs and wall-trees; as alſo, ſtan-
apple and pear, for they will ſhoot up for a bo-
but betwixt three and four foot for ſtandard-cher-
d plumb. Pare its head, raggled by the ſaw,
the, then cleave it a little beſide the pith, and with
pen-knife cut away any jags, roughneſs, or
neſs, that remains after cleaving on each ſide the
within; then prepare the graff, by cutting on both

ſides from ſome knot or bud in form of a wedge, ſ able to the clift, with little ſhoulderings, not raggi the end: For if the bark be raiſed at the tail or lo end of the graff, eſpecially the cherry, it impedes growing; cut off its top about three inches above ſhoulderings, cloſe behind a leaf-bud, then open clift with a graffing iron; ſet the graff, or two graffs the ſtock be great, in the clift, ſo as the inward p of the rind of the graff may join exactly and cloſe the inward part of the bark of the ſtock; and if pinch, as great ſtocks will, bind it not as you muſt the ſmaller: or put in a little wedge gently to keep take a ſlice of bark from the cut off head, and cut a h therein, ſo as it may ſlide on, and join round the of the graff, and cover the ſtock cloſe over in form a hawk's hood. Laſtly, Cover it with clay, temp with horſe-dung, that hath a little ſhort litter in it, with ſoft wax for ſmaller ſtocks: This is to preſe it from cold and drying wind, and from wet, wh hurts moſt.

*N. B.* If the ſtock ſtands perpendicular, ſet the g on the weſt ſide; if not, then place it on the up ſide; if you fear winds, ſupport them with ſticks, ſplinters to a broken bone.

Unbind, when you find their bands hurt them, wards mid-ſummer; at which time top ſuch as h ſhot ſo large as to be in danger of breaking with winds, eſpecially theſe graffed in the bark, herea to be deſcribed.

Pull up ſuckers cloſe and cleanly from the ro alſo rub off buds that appear on the ſtock. Graffs not thrive or proſper, if the ſtocks be uncleanly o thriving, and this is occaſioned through bad traini

Another way of clift-grafting is, to cleave the g and not the ſtock; thus, prepare the ſtock and as for ſhouldering, next deſcribed; then with the ſe cleave the inward face of the graff in the cut t, and cut up the ſtock with a ſlop, ſo that one lip he clift ſcion may be bound on the one ſide of the k, and the other longer lip on the outſide, as in uldering.

The graff ſits here, as on a ſaddle, with a leg on h ſide the ſtock, and therefore will better reſiſt the ds; as alſo, the wound cauſed by the clift will ner recover. I have them wholly healed the ſame r wherein I graffed them.

houldering is to cut off the head of the ſtock, and othe it as at firſt; then cut the graff from a knot or on one ſide, ſloping about an inch and a half long h a ſhoulder, but not deep, that it may reſt on the d of the ſtock: the graff muſt be cut from the ulder, ſmooth and even, ſloping gradually, that the er end be thin; place the ſhouldering on the head of ſtock, and mark by the end of the cut part of the f, and cut away ſo much bark off the ſtock as the f did cover; then place both together, that the parts of both may join, and ſaps unite one with other; bind them cloſe together with a baſs, and d them with clay tempered with dung or wax, as ore.

raffing in the bark may be uſed in greater ſtocks, n re-graffing of old trees, and is only for apples pears, becauſe later in performing, which may be latter end of April, when the bark of the ſtock peel; for when both ſtock and graff is prepared, n ſhouldering, inſtead of cutting away ſome bark the ſtock, for receiving the graff, you muſt ſlit it he ſouth-ſide from the top, almoſt as long as the ing part of the graff, and looſen the bark at the of the ſlit, with the point of the half round wedge, e of purpoſe, tapering downwards to a point; ch alſo thruſt down between the bark and ſtock, to

make room for the graff; but firſt cut a little bark at
thin end of the ſlope of the ſcion, that it double no
going down, yet leave it with a ſharp edge; and
cauſe, when the ſcion is put in, it will bear the
hollow from the ſtock-nick or ſlit, preſs the bark
each ſide the ſcion, ſo that it may fall cloſe to
ſtock, and to the edges of the ſcion, then bind and
ver as before.

Graffing by approach, is good for theſe that
not well otherwiſe; but herein the ſtock muſt be
ced ſo near the tree where the graffs are, that
branch may reach it; then may you clift or ſhou
graff the twig you mean to propagate into the ſto
and as ſoon as graff and ſtock do unite and are inco
rated together, cut off the ſcion or graff underne
cloſe to the graffed place, that it may ſubſiſt by
ſtock only.

Root-graffing is to take the twig of any tree
mean to propagate, and a piece of root of the
kind, cut and raiſed up a little, as in § IV. and
them by ſhouldering, uniting the but-ends of graff
root, cauſing the rind of the root join to the rind o
graff, and ſo bind them : the next year they ma
tranſplanted to a nurſery : theſe will be eaſily d
ed, and readily hold ; beſides that the defect of ſ
are ſupplied, and they fit for tranſportation.

There are many other ways, but theſe named
the moſt material.

The time of graffing is, when the ſap begins t
in the ſpring ; you muſt begin earlier with cherries
plumbs, ſome later with pears, and end with ap

Chooſe not your graffs from ſuch trees as a
bearers, neither from ſuch as have not come to
at all; but from conſtant and well-bearing trees
the faireſt and fulleſt of buds thereon : let them
a piece of the preceeding year's ſhoot, whereof

e tail and ſhouldering immediately below the but of
ung wood; and if the ſtock be large, make the
affs wholly of the laſt year's ſhoot; and ſuch, having
owing buds actually upon them, I have ſeen bear
it the ſame year. But ſome old bearing trees
ld no graffs; wherefore you may cut out ſome great
anch, that it may ſhoot anew; or rather, take off
e ſame branch by circumpoſition, and plant, and the
w tree may furniſh you with graffs. Cut your graffs,
they ſprout, and keep them, or carry them with
ir ends in clay, or dry in a box, their tops being
off.

IX. Inoculation differs from the former way of
ffing, and is moſt proper for apricocks and peaches:
ſort will more readily hold by this, than by graf-
, except cherries; they come quickly to be a tree:
I had a plumb ſhot above ſix foot ten inches the
year; and tho' they miſs, yet the ſtock is not the
ſe. Therefore,

n ſome convenient and ſmooth part of the ſtock,
he ſame height as for graffing, with the pen-knife
the rind athwart, and from the middle thereof,
tly ſlit the bark about an inch long, in form of a
not wounding the ſtock; then nimbly prepare the
, by cutting off the leaf to a little of the tail; then
he bark on each ſide, a little diſtance from the
and, about half an inch above and below the
, ſharpen the end below, that it may the more
y go down; and having a quill cut more than
way, about an inch long at the end, for dividing
ud and rind from the ſtalk, therewith take it off
erouſly, and leave not the root behind; for if
ſee a hole under the bud on the inſide, the root
ne; caſt it away, and prepare another when the
is ready; then with a bone, made half round,
ſharp at the point, tapering on one ſide, raiſe the

bark or rind on each ſide the ſlit carefully, not hurti the inner rind, and with care put in the bud, thru ing it down till its top join with the croſs cut; th bind it cloſe above and below the bud with dri ruſhes or baſs. Or,

You may ſlit the bark of the ſtock upwards from croſs cut. Or,

Cut the edges of the bark about the bud, of an long ſquare, and the bark of the ſtock fit to receive ſame. Or,

Reſerve one fourth of this ſquare piece of bark the ſtock untaken off at the upper end, which muſt raiſed, that the ſhield may ſlide up betwixt the ſame the ſtock, and ſo bind it gently as before.

The time for inoculation is, when the ſap is in the ſtock, namely, from June till Auguſt; ne month after unbind, *i. e.* cut through binding bark, with a gentle ſlit on the back-ſide of the ſto leaving the binding to fall away of its own accord which time you will ſee which holds. In March foll ing, cut off the head of the ſtock, four inches ab the bud, and, at that time twelve months, the too, that it may heal over the wound. You prune as graffs, and pull up ſuckers, *&c.* See chap. for more.

Chooſe buds from good bearers, as before; take t from the ſtrong and well grown ſhoots of the year, and from the biggeſt end of the ſame; an you muſt carry them far, firſt cut off the leaves top of the ſtalks, and wrap them in moiſt leave graſs.

This much at preſent in general, for the time manner of the ſeveral ways of propagation.

X. In planting all plants, prune their roots, *th* top them a little with a ſharp knife, except aſpa Alſo cut their heads, except greens, and tops ſt trees, ordained for timber; but the ſide-boughs oſt, that the head may be proportioned to the root.

Plant no trees deep, altho' ſome deeper than others; hen their roots run near the ſurface, there they reive the beneficial influence of the ſun and ſhowers, hich make vegetables fair and fruitful.

Lay litter, or the like, above ground, the compaſs f their roots, eſpecially the firſt year of planting: nd, indeed, all plants require ſome ſhelter and ſhade ith moiſture, when firſt planted, till they get rooting d ſtrength.

Cut the leaves and ſtalks of flowers and herbs, when ſt flower or yielding ſeed, nor at any time ſuffer too any; rather purge them in time. No more branches, owers, fruits, on any tree or plant, than the root n nouriſh perfectly.

Neither plant or ſow every year the ſame plants on e ſame ridge or bed, for it improves them to be hanged; ſee more fully, planting, pruning, preſervg, *&c.* in their reſpective places following.

## CHAP. II.

## How to cultivate and prepare GROUND.

### SECT. I.

HAVING ſhewed the ſeveral ways of propagating plants, it is alſo moſt requiſite, that you prepare e ground for effectuating the ſame. And that is, in e firſt place,

To trench it, *viz.*, Begin at one end of the ground ou mean thus to cultivate and open, by a trench from e ſide thereof to the other, three or four foot broad, d from one to two foot deep, as the quality of the round admits, and the plants require, as liquoriſh, hich muſt have it deeper: This being opened, meaſure off other four foot parallel at its ſide, turn tha into the open trench, with the turf or ſurface in th bottom, and the clean earth on the top; the fillin whereof emptieth another; therefore cut off othe four foot, and turn in as before; thus trench by trenc till the whole be finiſhed. I preſume you carry th earth of the firſt trench to fill the laſt, or have otherway filled hollows therewith, and left the laſt trench ope if convenient, for receiving weeds. Or if the groun be hollow in the middle, begin there, and trench bot ways to help the level; if high in the middle, begin a both ſides or ends, till the two open trenches meet a the height, for the ſame reaſon.

The latter end of harveſt, the ground is ſofteſt fo trenching, and it lying all winter open to the wea ther, is thereby meliorated: for, as trenching doth we prepare hard, barren, and untilled ground, ſo doth i ſuch as is exhauſted by long and unſkilful uſage; an if at every trenching you apply proper manures mix with the ſecond ſpading, or under the laſt ſhovelin and in five years re-trench, it will become to your wi for all gardens and plantations.

II. The next excellent way of preparing ground, i fallowing: begin as ſoon as you reap the crop; but le the ground be ſomething moiſt, although you ſhoul ſtay for a ſhower; if it be not late in autumn, you ma fallow in November, eſpecially if it is ſtiff ground, an re-ſtir in March or April, when you plant or ſow: an altho' you ſhould neither plant nor ſow it that year, kee it clean of weeds in ſummer, by hoeing, &c. and at au tumn fallow again; but, as in trenching, ſo in thi work, you ſhould mix it with proper ſoil.

Make uſe of the Engliſh faſhion of ſpades, whic are now common, and let every two delvers have ſhoveler, to caſt up the ſmall mould that falls in th bottom of the furrow; and the delvers ſhould turn u

th

e point of the ſpade, and nimbly break and chop
the clods thoroughly; this is very material, as well
the thorough mixing of the manures with the ſoil;
that mixing, ſtirring, re-ſtirring, and fallowing, is moſt
rtinent for the cold, chilled, barren, rugged-natured
ound in Scotland, all which ſoftens and tenders it,
l ſo fits it for nouriſhing good ſeeds and plants, as
an tell by experience: Therefore,

II. I adviſe our huſbandmen alſo to the fallowing
their land as one requiſite: Slit-folding the ſame, as
ſecond: Watering or overflowing the land, as a
rd: Burning the turf, as a fourth: Draining exceſ-
e moiſture, as a fifth: Applying proper ſoils and
nures, and that at proper ſeaſons, as a ſixth: Lay-
the land to reſt, as a ſeventh: And, above all, in-
ſing and planting about their land, as the laſt and
t improvement.

xample: At the autumnal fallowing, delve or plow
p, and apply hot unrotted and uncompounded dung
manures; at ſpring re-plow or re-delve, and apply
h dungs and manures as have lien mixed and rotted
h earth; then mix, rake or harrow. The ſummer
owing is to deſtroy the weeds, and that may be
e by turf, plough or hoeing.

he huſbandmens ſlit-folding is equivalent to garde-
s covering the ſurface, eſpecially of dry and barren
und, with litter, *&c.* The dung and urine of ſheep
cattle waſhes evenly into ground, and ſhould be
ed down by the ſummer and autumnal fallowing,
its ſubſtance exhauſt by the ſun and air, except that
graſs, then only harrowed with a buſh of thorns;
ad of which gardeners ſhould top their coverings
itter with a little earth or ſand, and at autumn delve
down together.

uſbandmens watering is, by running plough-furrows,
trenches, where needful, alongſt or croſs their land,

ſo as the water may gently ſwim over the whole: Th
is to be done in the winter, on dry and barren groun
which leaves a ſulphureous pinguidity behind it, a
ſtrongly improves either for graſs or corn; but th
this huſbandry ought as well to be practiſed on w
grounds is evident, becauſe the running of this ca
ries away the ſour quality of the other. I ſhall ſpe
of gardeners watering more particularly.

Burning land is, to pare its ſurface with the tu
plough, and lay the ſame in heaps to burn, and
ſpread the aſhes: But if moſs and heath, ſet fire throu
without turfing it; this deſtroys its noxious ſour m
ture, and the ſalt remains in the aſhes, for the ſtrengt
ning the ſpirit of the earth.

Draining the wet, boggy, or dropſical ground, is, b
trenches a little deeper than the ſpring, how deep ſ
ever it is, and then apply lime, ſoot, aſhes, pigeo
dung, *&c.* As for the abounding of ſuperficial wat
that is eaſily helped by common water-ſewers, or, i
ſome grounds, by ſinking holes down to the channel

As the huſbandman ſhould have his land laid out
divided into ſeveral claſſes, ſome for corn, ſome f
meadow, and others for paſture; ſo when he has tak
five, ſix, or ſeven crops of corn, he ſhould lay it o
for paſture, otherwiſe it will wear out of heart; a
likewiſe the paſture muſt be plowed up for corn, eſp
cially when it begins to grow moſſy.

The way that the gardener turns his ground to re
is by trenching and re-trenching, whereby it can nev
wear out; although he muſt alſo obſerve to change th
crops, as well as the huſbandman.

How to incloſe and plant about your land, ſ
chap. IV.

IV. Among all the varieties of ſoils, that next th
ſurface of them is beſt, becauſe prepared by the inf
ence of the ſun and ſhowers.

hat called a loam or light brick earth, is the moſt ural ground for gardens and plantations; ſtrong e, white, or red clays are worſt: but the nearer y are to a mixture of loam, or if they have ſtones urally in them, they are the better: alſo the nearer velly or ſandy grounds incline to loam, ſo much the ter. Therefore if your ground be ſtiff, trench with ns, ſtraw, bean-ham, thatch, litter, earth under od-ſtacks, ſmall ſticks, *&c.* If gravelly or ſandy, n trench and mix with loam or the upper part of y; the turf of both is good.

f ſtrong clay, trench and mix with fat ſand, high- y earth that hath drift-ſand in it, rubbiſh of build- s, lime-rubbiſh, gravel, *&c.* And if it be for gardens orchards, enrich it with dung mixt with drift-ſand, ight mould, heaped up *ſtratum ſuper ſtratum, i. e.* ing by laying. And if the ground be cold, the more eons and poultry dung you put upon it, the lighter warmer it will be. Or make *ſtratums* of earth, g, and unſlaked lime-ſtones to lie a year, and then ly this compoſition, which has been hitherto a at ſecret: therefore prize it.

Binding grounds, which will not rake as you delve, ry and hard, trenching and fallowing expoſeth m to be ſoftned by weather as is ſaid: but if wet tough, mix with aſhes, ſea-ſand, *&c.* in cultur-

For preparing my compoſts, I uſe a pit, wherein etimes I raiſe a hot-bed, made oblong, about four t deep, as I can get dungs, vegetables, and ſoils to it: here I lay all kinds or ſorts with *ſtratums* of th, as horſe, nolt, ſheep, pigeons, and poultry g, ferns, weeds, leaves, ſoot, aſhes, ſticks, ſaw- t, feathers, hair, horns, bones, urine, ſcouring of ds, ditches, blood, pickle, brine, ſea-water, the nſing of a houſe of office, *&c.* I let them lie a year at leaſt, but not above two: then I take them out, a then ſtir, air, mingle and work them by themſelv as I have occaſion, till they become ſweet and of agreeable ſcent, yet retaining their virtue; this fre them from the noxious qualitie; they otherwiſe reta and conſequently are not ſo apt to gender or produ worms, weeds, and muſhrooms, inſtead of wholſo and pleaſant plants, fruits, and roots for the table.

V. Obſerve what manures are proper for the ſo All hot dungs and manures are proper for cold, ſt and moiſt grounds . ſo all rotten and cold dungs a manures are proper for dry and hot grounds. All m nures that retain moiſture, are for poor, ſandy a gravelly ſoils.

Horſe-dung is for ſtiff and cold ground: cows a ſheeps for hot and dry; aſhes for cold, ſtiff and moi old woollen-rags for poor and dry; lime moſt exc lent for mooriſh and heathy land; hair of beaſts f dry and ſtiff grounds; pigeons and poultry dung f cold and moiſt; rotten ſaw-duſt for dry; rubbiſh building for ſtiff cold grounds; ſalt for cold and moi but uſe it moderately, for it deſtroys vegetables dry ground, eſpecially at firſt, but when melted winter rains, it fertilizeth: ſome have ſown it on m mooriſh land to great advantage, for being far fr the ſun they have little volatile.

VI. In your applications you are to conſider, t rotten dungs and manures are proper for trees a ſuch ſlow growing plants; and unrotten dungs and m nures for annuals, they being quick of digeſtion.

Let not the root of any tree ſtand on dung, far l unrotten dung, which burns them; but upon pre red and proper ſoil, and compoſed, well mixed, air ſtirred or fallowed. Moſt nouriſhing are the cleanſi of ſtreets and highways together, with the mud a ſcouring of ponds and ditches: if firſt laid on

he open air to rot and ſweeten, and if you mix it
*ſtrata* of lime, that adds much to its goodneſs
fertility.

oreſt-trees require not ſo much dung as fruit-trees;
well mixed and fallowed ſoil.

itchen herbs and roots require very fat, light,
n, and well cultivated ground.

owers and fine plants cannot endure ſoil too rank
dung, neither can they proſper if it be poor; but
, clean earth, with rotten nolts dung, well beat-
nd mixed together, and a little rotten willow-earth
tle below the roots: then comes in that delicate
the turf of the paſture, mixed with a little cows
ſheeps dung, well rotted and mingled as before.
more particularly what ſoil each kind or ſort of
delights in, or loves beſt, in their reſpective chap-
nd ſections following.

I. As for making the hot-bed for raiſing early and
r plants, dig a pit two foot deep, becauſe in the
the ground is often wet in this country, and of
h and breadth as you have occaſion, in a conve-
and warm place, lying well to the ſun and ſhel-
from winds, which you may help by art, if not
ally ſo; fill it with dung and litter from the ſta-
about a fortnight's gathering, and, when well
and even on the top, lay about four inches thick
n, light, but freſh and clean, ſifted mould there-
rch it over with ſticks, and cover it with mats
or five days to cauſe it heat; then uncover and
air a day or two, that its violent heat may paſs
en ſow your ſeeds and cover the bed again. And
xt day, if you find the bed too hot, give it more
too cold, caſt ſome ſtraw on the covering, un-
heat return; thus, by airing and covering, you
eep it in a conſtant temper: when the ſeeds come
e them air to dry the moiſture raiſed by the
heat

heat of the bed. How to cover the ſeeds with ſes, ſee chap. VI. § I. But as there is great troubl rightly ordering this ſort of hot-bed; ſo it is here medied by a better, which is only to fill and tread pit full of new dung and litter, not covering it w earth, and place wooden caſes therein, about nin ten inches deep, and about three foot broad, ha wood handles at the ends; bore them full of auge wimble holes at the bottom, and fill them with ſaid earth, and therein ſow your ſeeds; inſtead of t ſome uſe baſkets or pots, which are very fit: but t caſes with the earth in them muſt be kept warm ring the whole ſeaſon wherein a hot-bed is neceſ and if they loſe heat, add freſh dung and litter u about and betwixt the caſes, conſequently the tro of tranſplanting from one hot-bed to another is by ſaved. There is dew on the glaſſes while the remains, but if exhauſted they will be dry. Pr a ſhelter over the whole, if you pleaſe, and fram glaſs over the in-ſide caſes; others you may lea pen, as your ſeeds require. By this your pit and are every year ready to your hand, requiring c ſupply of freſh dung. But this pit will be ſo the more excellent, if lined round at the ſides brick: and where you cannot conveniently ſink water, you may build the ſame above ground. when this pit is empty, it will be alſo ready fo tering of flower-pots, with july-flowers, *&c.*

VIII. In watering plants, uſe not well-water cially for tender plants, neither rivers that ru and quick, on ſharp gravel: theſe yield no n ment to plants, but rather chill them; therefor muſt uſe ſuch, let them ſtand ſome time in the open air, uncovered in tubs.

When dung lies above ground about any pla uſe to do with trees, artichokes, *&c.* the wa

ding thro' the ſame is very reliſhing to the roots, if
pour the water at a little diſtance round the tree:
when laſhed on the ſtem, it waſheth the earth
n the roots.

ater no plants with ſtanding, ſtinking, ditch-wa-
nor any water that ſtinketh: rain-water and large
d-water is excellent, but keep it not too long; yet,
a large veſſel, the oftner you ſtir it, the longer it
keep ſweet; ſo the larger your ponds or rivers are,
the opener to the ſun and air, and the more moved
orſe, geeſe and ducks, the ſweeter it will be. And,
he waſhings of ſtables, ſtreets, dung-hill water,
run into them, that adds much to their fertility,
iding they have ſome ſtirring, to make them ſweet,
diſſolve the crudities of dung, *&c.*

you fear dry weather, defer not too long, but
er while your ground is yet moiſt, if you intend
ater at all. Theſe that root deepeſt water moſt;
alſo when you begin, continue it as long as you
occaſion. In watering trees and greater plants,
and waken the earth a little about their roots with
rk, ſo as it may drink the more equally, minding
read it firm again. And for the ſame cauſe you
ſink the earth a little, in form of a ſhallow diſh,
nd your artichokes, *&c.* Dip your flower-pots in
b of water, to drink through the holes at the bot-

hen you water beds of ſmall ſeeds with the wa-
g pot, ſhake it nimbly, that it may fall like a
er of ſmall rain. I have often made uſe uſe of a
dful of ſmall ſtraw or hay, drawn as thatch, tied
e middle, and at one end poured water with a cup,
ſhaken the ſame, that it appeared like a gentle
wing rather than a glutting rain.

me that are deſirous to have the ground always
t about any plant, generally place near it a veſſel
with

with water, and in it a piece of woollen cloth, one end thereof hanging out to the ground, an other in the water: the cloth being firſt wet, drop continually, if the end without be lower that within the veſſel; and when the water within it may be augmented: if it drop not faſt enough, cloth may be increaſed, if too faſt, diminiſhed.

Early in the ſpring while the weather is yet co intreat you to be cautious in watering the leaves o young and tender plants, only wet the ground a them: when your plants or ſeeds are more hardy the nights yet cold, water in the forenoons; but the nights are warm, or days very hot, then the e ing is the beſt time.

Plant in wet, and ſow in dry; I do not mean wet or over dry, and always let them have good which conduceth much to their health and life, out which nothing can live.

## CHAP. III.

## How to propagate and order FOREST-TRE

### SECT. I.

OMITTING here the diſtinction of ſpecies, ing confined them to one chapter, I ſhall ſ briefly, yet, I hope, plainly, of their governm thus:

Although the moſt of foreſt-trees may be incre by ſuckers, layers, *&c.* Yet if you deſire trees your while, raiſe them from the ſeed. There prepare a ſeminary or ſeed-plot, together with a n ry well ordered and handſomely made up in beds, a part I. chap. V. § II. And there ſow and ſet ſeeds and plants in their reſpective ſeaſons; keep clean from weeds, and water them when need

qu

es. Alſo dig up and dibble in theſe caſt up by
froſts, as well as ſhade and ſhelter them in time
eceſſity. Let them ſtand, ſome but one, others
years in the ſeminary after they riſe; then re-
e and plant in nurſery, in diſtance a foot one way,
half a foot the other, or five rows in the bed, if
foot broad, in ſtraight lines, having firſt pruned
r roots, eſpecially top'd the main root that runs
ight down; ſo ſhall they ſend forth ſide or feeding
ts, and agree well with tranſplanting thereafter.
proportion the head to the root, by pruning up
ſide boughs, reſerving ſome of the ſmalleſt all the
on the body, to ſtop the ſap in its courſe, that
tree may grow great with its height, and this will
e the beſt fortification againſt the winds.

ut not the tops of theſe trees you ordain for tim-
except ſome grow crooked in the nurſery; theſe,
ept greens, you may fell near the ground in the
ng, or at midſummer, and train up the ſtraighteſt
t again to be the tree. When they have ſtood
e years at moſt in this nurſery, replant them at a
er diſtance in ſpade-bit trenches, three foot one
, and two the other, where they may ſtand till
are ready for planting out in your avenues, parks,
es, *&c.* which will be in three years, if theſe rules
obſerved. But if you think them yet too ſmall for
ing out, you muſt tranſplant them at a wider di-
ce, and at every removal top all their roots with a
p knife, and thin the ſide-boughs for lightening the
d; but do not prune up all, as is the cuſtom of
rant gardeners, whoſe trees are ſo long, ſmall and
heavy, that they cannot ſtand: but of pruning
e hereafter. If you neglect this tranſplanting and
ning the top-root, while young, your eſſays to do
hen old will prove ineffectual, nor will they ever
orth the while.

All the time that your trees remain in the nurſ and at leaſt the firſt and ſecond year thereafter careful to cleanſe them from weeds and ſuckers delving, hoeing, &c. The advantage here will counter-balance the coſt.

Chuſe your ſeeds from the high, ſtraight, yo and well-thriving trees; and the faireſt, weightieſt brighteſt thereon; for 'tis obſerved, that the ſeed hollow trees, *i. e.* trees whoſe pith is conſumed not fill well, or come to perfection, as Langford of pears, concluding that the kernels of fruits de much upon the pith. And I adviſe you to reject as were never ſet by art, as peeviſh parents for dren, that muſt be thus accommodated with unc lodgings, as well as dyets in their travels: 'tis tality attending many people, who account all t ridiculous that they have not been bred up wit accuſtomed to; ſo with trees in ſome reſpect.

II. As for the oak, the acorns which we get put forth a luſtier root than ours; no approve of them in natural woods; they ripen i beginning of October, then gather them in a dry and lay them in ſome open room to dry a month, ing them with a broom; then lay them in a cou dry ſand till the latter end of February; dibble in the ground two inches deep, twelve rows i bed, if ſix foot broad, and they will come u ſame ſeaſon; and altho' they will grow on any gr yet they grow better on the beſt, that is, a loamy earth. Order them as is directed in the ſery.

The elm that grows with a clean and taper b moſt worthy your care: we have extaordinary and ſmooth barked elms from Holland; but I they take more pains in preparing and makin earth fine for them, which certainly is moſt

e to their ſmoothneſs, Their ſeed falls in the be-
ing of June, tho' it doth not fill every year ;
n they begin to fall, gather and ſpread them on a
h a little, then ſow them immediately promiſcu-
y over the bed, and very thick, covered with near
nch of earth ; I had them come up within ten days ;
love a light earth ſomething moiſt.

he aſh ſeed is ripe in November and December ;
ng ſpread them a little to dry, put them in a hole
*um ſuper ſtratum* of earth and ſeed, take them out
pring come twelve months, and ſow them as elm,
then they riſe, and love a tender ſoil not too
ſt.

he great maple, commonly, but falſly called
e, its ſeed is ripe in September ; ſow it at ſpring,
omes up that ſeaſon; affects a ſoil with aſh, or ra-
better and ſtronger.

he ſmaller maple is rather for hedges; its ſeed lies
h.

he beech ſeed ripens in the end of September, but
s not well every year, nor have we ſuch plenty of
rees as could be wiſhed ; for that cauſe we ſend
ad for ſeed : as ſoon as it comes to our hand it
be ſown, or rather kept in a couch of ſand, as
reat maple, till the ſpring ; for it comes up that
n ; it affects a light ſoil, not clay.

e walnut and cheſnut, although they are fruit-
, I plant without the orchard walls ; their nuts
in the beginning of October : when they begin
ll, take them off, and rub off the outward huſk,
do not wet them ; then order them as acorns :
come up the firſt ſeaſon, and affect a light loa-
arth. I could wiſh for more of the ſeed of horſe-
uts from Turky.

e black cherry or geen is a tree that I love well
venues and thickets ; there is a ſort at Niddry-

caſtle, where I was born, ſeven miles weſt from dinburgh, whoſe fruit is preferable to any cherry; take it to be a ſort of heart, but 'tis a great bear which is a property the heart-cherry wants: they a beſt ſtocks for ſtandard cherries: the learned Evel and the ingenious Cook take notice of this tree. B it is now found, that heart-cherries grafted upon t bird cherry, makes them more fruitful by far th when they are grafted upon the black cherry or gee tree.

Gather their fruit when full ripe, in the beginni of Auguſt; eat off the fleſhy part, *i. e.* the fruit, a lay the ſtones to dry a little; then lay them by ſt tums with earth, which prepares them, if ſowed ſpring, to riſe that ſeaſon, otherwiſe they lie till t next: they affect a light ſharp ſoil, and, if you ma mix it with compoſt, and then it ſhall be fit for che ries of all ſorts.

The fruit of the wild-ſervice, commonly call rons-tree, ripens in September, which you may e or rub off by rolling in ſand; then prepare and ſo them as the wild cherry or geen-tree. They love moiſt ground or ſhade not wet; if you incline to pla them in a better ſoil in avenues, methinks they wou be very pleaſant, when ſpread over with their wimbl faſhioned bright red fruit.

Of the lime or linden tree; the broad leaf'd, wi odoriferous flowers is beſt; the ſeed ripens the begi ning of October, but fills not well every year with u and indeed we have but few that come to any con derable perfection; yet I have ſeen them bear ſeed Hamilton: it ſhould be a little dried in an open roo and couched in moiſt ſand till winter paſs, and th ſown in a little ſhade in May when froſts are gon becauſe as it comes not up the firſt year, ſo it comes within a day or two of that time twelve months

whi

ich it was ſown; and they muſt not be too much
poſed to the ſcorching ſun: they love a freſh loa-
earth, and, in planting them, I adviſe you to co-
the ſurface of the earth about them with litter, topt
h earth, the firſt year at leaſt.

he horn-beam may be ordered as ſmall maple:
y like a dry ground, and are for hedges.

he hazel and filberds ſeed or nuts, are uſed as
nuts: they delight in dry banks, nor are they
ely foreſt-trees.

he birch is a proper tree for much of our poor,
and barren grounds: I never raiſed any of them
ſeed, in the wood they are ſo plenty by ſuckers,
Many of theſe handſome trees I have planted
ceſsfully.

he ſeed of the bean-tre-foil, vulgarly called peaſe-
-tree, ripens in October; and being kept dry all
ter, and ſown at ſpring, it comes up that ſeaſon,
affects a moiſt ground, but ſweet.

he white poplar, vulgarly called abele, is a quick
wer and pleaſant tree, ſo is aſpen; they are eaſily
pagated by cuttings, ſo is the laſt by ſuckers: ſee
p. I. § V. They love a good ſoil, very moiſt.

he alder is very propagable, and loves the mar-
; and ſo is the willow, ſallow, and ozier, they
affecting a moiſt ground, and muſt be ſo kept till
ted.

ut I come to greens; as,

he pine-tree and pinaſters, whoſe husks you may
oſe to the ſun till they open, and ſeeds fall out, are to
ſown in March; but, if late before they come
e, as they require the ſummer ſun to open them,
u then ſow, they cannot get ſtrength ſufficient to
ſtand the enſuing winter; therefore keep them in
ſand all winter, and ſow them in the ſpring, for
riſe that ſeaſon wherein they are ſowed: they

love a good and tender ſoil; they are ſomething tend
while young, as all greens are; the great pine is te
derer than pinaſters, and nice in tranſplanting; the
fore obſerve the rule in chapter VII. § II. ſhade a
ſhelter in both extremities of heat and cold wh
young. But there is none ſo proper for us as,

The Scots fir: many of their cones have I gath
ed any time between January and the latter end
March; lay them on a cloth to the ſun which op
them, to be ſown the latter end of April: they co
up that ſeaſon, and love a ſoil with the pinus. See h
to order in nurſery: for they muſt be dibbled in ag
the firſt year, as ſpued up by froſts; they of any t
will grow on moſt ſorts of ground, if well orde
and prepared, and ſecured from drought the firſt y
And therefore help the ground where it is not to p
poſe, they will repay you or yours for your pains
you plant in gravelly, or dry ſandy ground, mi
with clay and turf a large diſtance round about
roots; or, if in ſtiff and moiſt clays, trench eight
nine foot on each ſide round the compaſs of the ro
adding ſmall gravel, fat ſand, *&c.* and plant ebb.
enough of this in the laſt chapter.

The ſilver fir is ſo ordered; only it is tender w
young and ſubject to blaſting.

The pitch-tree is a hardy tree, and no wond
ſeeing, as I am informed, it grows by nature plenti
ly in Norway.

The yew is alſo a hardy tree, and only requ
ſome defence while young; their berries ripen in
vember: rub off the fleſh or clammy ſubſtance,
lay them to dry a little, but not at the fire; then
them *ſtratum ſuper ſtratum* of earth and ſeed, pla
them in the ſhade till the ſpring come twelve mon
at which time ſow them, and then they ſpring: it
fects a good ſoil, not ſtiff.

The holly is to be uſed as yew, for they lie as g; it is the moſt proper for hedges of all the plants the world: next thereto is the hawthorn, tho' not reen, whoſe ſeed ripens in October, and is to be d as holly; for it riſeth not till ſpring come twelve nths: and the better you prepare and mix the und, the larger will they ſhoot. Nor let any gine, that holly alſo loves not dunged ground; , ſay they, poor and gravelly ſoil: But I know the trary by experience.

ſhall ſpeak of ſome ſhrubs in chap. VII. for I muſt e them here, and come to ſhew you how to tranſ- t and prune the ſtately foreſt-trees.

II. In tranſplanting, remove with earth about their s, if you can, eſpecially greens; at leaſt take all roots up a good diſtance from the ſtem, by making ench round, and be not haſty: then top all their s with a ſharp knife, the ſlope tending down as a e-foot; cut off all the bruiſed and broken parts till come at firm wood; top the ſmall roots like hair, ake them ſtiff, ſo as they fold not when the earth t in, and rot thereby: proportion the head to oot by thinning it, prune the ſide-boughs, reſerv- lways ſome for tapering the tree: theſe you may cloſe and ſmooth by the body, ſlanting upwards, hey will ſoon overgrow the wounds, if the branch off be not great. Cut not the tops of oaks or hes, they cannot endure it, neither any tree that ordain for timber; although I have been neceſſitate p great old trees, whoſe heads could not other- be conformed to their roots, which neceſſarily iminiſhed upon removal. But this is not the caſe ll-trained trees in a nurſery; neither muſt their roots be top'd.

e rule for removing old large trees out of s or other places, who were never before tranſplanted, is to make a trench at two ſides of the tr at a conſiderable diſtance, till you can force the tree up one ſide; then cut the top-root through, ſaving as m ny collateral roots as you can; leſſen its head, or l it, if it will ſuffer, and ſo ſet up the tree again, a tread in the earth about it, as it was; let it ſtand t years to emit fibrous or feeding roots to nurſe it wh planted out.

But to my nurſed trees again. When you remo as is directed, carry them as quickly to their new qu ters as you can: let the ſoil where you ſet them be connatural to the nurſery as poſſible; ſee the laſt cha for preparing grounds; and part I. chap. III. and I for the orderly ways of planting.

The beſt way is to make the holes a year bef you plant, and in ſummer ſtir and turn their ear that no weeds grow thereon: make them betw twelve and eighteen inches deep, and betwixt four a eight foot diameter, if ordinary trees: but, if t ground be bad, and not proper for the trees, th trench, mix and ply, till it becomes more agr able.

When you plant, lay the ſurface in the bottom, a fill up the hole with fine earth, till it can only adm the upper part of the root to ſtand level with ſurface; this is not to plant deep, for they that but cheat themſelves: then ſet on the root of the t in the middle of the hole, and if no earth adhere the ſame, make a little hut in the middle of ſm earth, and lay the roots right ſpread round about w your hands, that none lie folded or diſorderly; t put in fine ſmall earth amongſt the roots, and ſh and move the tree, ſo that the earth may go in mongſt them, till no cavity or void be left to let the air; ſuch roots as fold, raiſe up and level in th wonted poſture with your hands, ſhoveling on m

ca

h, and tread gently ; then fill one more, and tread
l with your heels, till it be as far filled up about
s it ſtood in the earth before ; make the bulk a-
t level on the top, and juſt the breadth of the hole,
it will be about half a foot above the ſurface, if
nary nurſed trees and good ground. You may
on the rounding-ſtring, to make its edges circular
handſome, or, if you intend to make it like a ge-
trical ſquare, then ſtraight lines from ſide to ſide
thicket, will make up the bulks, that the whole
appear as walks and borders two ways : lay new
e-dung, and litter or ferns, above the bulk, ſo as it
hes not the ſtem, covered with a little earth, to
it from drying ; the rains will waſh in its ſub-
e, and refreſh the roots ; beſides, it keeps out
mer droughts and winter froſts.

he firſt year, at leaſt, go through, now and then,
read them right after winds. I am not for ſtaking
, but for training them ſo as they may not need
xcept you drive three ſtakes about each tree at the
de of the bulk ; then the double ſtraw-rops, tied
its body to all the three ſtakes, will ſecure it ;
if you faſten croſs-ſticks, briers and thorns, this
be a fence about each tree. Rub off buds that
to break forth near the root, or any place where
would not have them ; but ſtill leave ſome here
here, to ſtop the ſap from running too much in
; keep them clean of ſuckers and weeds, by hoe-
ſummer, and delving and looſening the mould
them in ſpring and autumn, *i. e.* at the two e-
xes ; and tread them faſt again, as fearing drought
inds.

you obſerve what is ſaid, you may expect clean
ell-thriving trees, if right pruned, and well in-
.

The

planted, is to make a trench at two ſides of the tre at a conſiderable diſtance, till you can force the tree up one ſide; then cut the top-root through, ſaving as m ny collateral roots as you can; leſſen its head, or l it, if it will ſuffer, and ſo ſet up the tree again, a tread in the earth about it, as it was; let it ſtand tw years to emit fibrous or feeding roots to nurſe it wh planted out.

But to my nurſed trees again. When you remo as is directed, carry them as quickly to their new qu ters as you can: let the ſoil where you ſet them be connatural to the nurſery as poſſible; ſee the laſt ch for preparing grounds; and part I. chap. III. and I for the orderly ways of planting.

The beſt way is to make the holes a year bef you plant, and in ſummer ſtir and turn their ear that no weeds grow thereon: make them betw twelve and eighteen inches deep, and betwixt four a eight foot diameter, if ordinary trees: but, if t ground be bad, and not proper for the trees, th trench, mix and ply, till it becomes more agr able.

When you plant, lay the ſurface in the bottom, a fill up the hole with fine earth, till it can only adm the upper part of the root to ſtand level with t ſurface; this is not to plant deep, for they that but cheat themſelves: then ſet on the root of the t in the middle of the hole, and if no earth adhere the ſame, make a little hut in the middle of ſm earth, and lay the roots right ſpread round about w your hands, that none lie folded or diſorderly; th put in fine ſmall earth amongſt the roots, and ſh and move the tree, ſo that the earth may go in mongſt them, till no cavity or void be left to let the air; ſuch roots as fold, raiſe up and level in th wonted poſture with your hands, ſhoveling on m

th, and tread gently; then fill one more, and tread
l with your heels, till it be as far filled up about
as it ſtood in the earth before; make the bulk a-
t level on the top, and juſt the breadth of the hole,
it will be about half a foot above the ſurface, if
inary nurſed trees and good ground. You may
on the rounding-ſtring, to make its edges circular
handſome, or, if you intend to make it like a ge-
trical ſquare, then ſtraight lines from ſide to ſide
thicket, will make up the bulks, that the whole
appear as walks and borders two ways: lay new
e-dung, and litter or ferns, above the bulk, ſo as it
hes not the ſtem, covered with a little earth, to
it from drying; the rains will waſh in its ſub-
e, and refreſh the roots; beſides, it keeps out
ner droughts and winter froſts.

he firſt year, at leaſt, go through, now and then,
tread them right after winds. I am not for ſtaking
, but for training them ſo as they may not need
xcept you drive three ſtakes about each tree at the
ide of the bulk; then the double ſtraw-rops, tied
its body to all the three ſtakes, will ſecure it;
if you faſten croſs-ſticks, briers and thorns, this
be a fence about each tree. Rub off buds that
to break forth near the root, or any place where
would not have them; but ſtill leave ſome here
here, to ſtop the ſap from running too much in
; keep them clean of ſuckers and weeds, by hoe-
ſummer, and delving and looſening the mould
them in ſpring and autumn, *i. e.* at the two e-
xes; and tread them faſt again, as fearing drought
vinds.

you obſerve what is ſaid, you may expect clean
ell-thriving trees, if right pruned, and well in-
d.

The time of planting, ſee the ſeaſon for off-ſe
chap. I. § IV. Neglect not your time of early pla
ing, that is, as ſoon as they leave growing, and b
fore the froſts come on, and you ſhall ſee them ſ
out-ſtrip theſe ſet in the ſpring; though I have oft
planted in the ſpring through neceſſity; but then I w
always ſomething more than ordinary careful to d
fend them from the enſuing droughts, by coveri
their bulks, watering, &c. yet I prefer the ſpring f
fir and other ſuch greens, which therefore unavoidab
require the ſame care.

IV. I ſhewed before how to prune in the nurſe
while young; now continue it when planted o
whilſt they are ſmall, prune every year; when a lit
older, once in two years; then once in three or fo
and never ſeldomer than in five or ſix.

And as you prune up the body till it arrives at t
deſired height, leave ſmall branches here and there
the way, that it may bring greatneſs with its heig
and be of conſequence the more able to ſtand; let
ver a tree get a greater head than its root is ſuffici
ly able to nurſe and bear; neither be raſh in lop
them, except they be already top-heavy, which bri
crookedneſs; if ſo, cut at a crooked place, ſlant
upwards, clean and ſmooth, and train up the ſtraig
eſt ſhoot again to be the tree; or rather, if you c
ſave its head by thinning, *viz.* cut the under-ſide t
at mid-ſummer, and ſlit the bark in the ſpring,
may it grow ſtraight and taper: purge ſtill the b
when needful, and prune ſuperfluities; cut off all t
croſs, rub, fret, and gall one another. Permit
trees to fork; train them with one ſtraight and ta
body, and a handſome, round, pyramidical he
And when you prune, cut cloſe and ſmooth by
body or bough, with the knife, or chizel and mall
or, if the branch be great, cut with a ſaw, nicking

t underneath, and ſmoothe it with the chizel, ſo will
heal the better: but, if the tree be very old, and
branches great, ſuch will never be able to over-
w the wound; therefore, if you muſt cut ſuch, do
t a little diſtance from the body, the wound de-
ing to the horizon. Thus train pines, firs, pitch,
d theſe of the conical tribe in ſtories only, which
thod they naturally follow; you may cut out ſome
the greateſt branches of the under ſtory, but ſo as
u leave them regular or equally furniſhed round; ſo
y you leave one ſtory, cut out the ſecond, leave
third, *&c.* cut not their tops, yet you may crop
ne of their ſide-boughs, if the tree be top-heavy,
d afterwards, as the tree gets footing, cut theſe
an off.

There are two ſeaſons for pruning ſuch as loſe the
f: the firſt for theſe of little pith, is October and
vember, or any time in winter; and for theſe of
wood and great hearts, and greens, let the froſts
over, and before the ſap riſe in them; except firs,
d other roſinous trees, which muſt be pruned in No-
ber, becauſe, if pruned in March they bleed, and
September and October they have not given over
wing.

The ſecond time is mid-ſummer, which is ordinarily
ut the end of June; this is a ſafe time to prune
ſe of great pith, and ſuch as are unapt to bleed;
eſpecially for young ſhoots of this year: extirpate
ſuch buds and ſhoots as you deſire not to grow, and
eby you may make clean bodied trees, although
er ſo apt to break out in boughs, as ſome elms are.
the diſeaſes of all trees, with their cures, ſee chap.
§ VIII. and IX.

CHAP.

# CHAP. IV.

## Of HEDGES or INCLOSURES.

### SECT. I.

AS there is no country can have more nee planting than this, ſo none is more needfu incloſing; for we well know how vain it is to p unleſs we incloſe.

I ſpoke of brick and ſtone-walls in part I. cha § V. Now, for hedges, I prefer the holly and thorn, raiſed from ſeed, altho' there are ſeveral ot mix not hedges, becauſe ſtrong growers overgrow weak; neither ſuffer briers, brambles, docks, or th therein.

II. Your hollies having ſtood two years in th minary, and two in the nurſery, remove them trowel, or a ſpade, with a clod of earth at their croping ſuch roots as appear without the clod w ſharp knife, and leſſen its head by croping the boughs, but cut not its top; plant it in made up ders, or at the back of ditches, at a foot diſtan good earth. Let them ſtand two years untouche cept weeding; then cut their tops at a bud, to them furniſh thick, and ply their ſide-boughs to thro' one another, like ſlicing or feathering; and year fall to work with the ſheers, cutting both and top as we uſe to do with box, *&c.* never ſu ing or binding any hedge, as is the cuſtom of Plant your hollies in April, and, when ready fo ſheers, cut in May and July therewith, and ſo them cloſe from the bottom, but neither too nor too high.

III. The hawthorn having ſtood two or years in the ſeminary, pull them up, and cut th heir roots, and their tops within four inches of root, and plant them within the fence or back of ditches in the good earth; delve them in ſpading, ſpading all alongſt two rows, at a foot diſtance, ding in equilateral triangles, ſtill thickning your ler by adding good earth, *&c.* Let them ſtand three s untouched, except weeding, and repairing where is dead; then fell or cut them off within half a of the ground, ſo will they ſhoot forth a thicker oung ſhoots, which next year may be train'd with ſciſſars, as before is inſtructed.

. If you would plant your hedge on the face of ch, as in wet and tough grounds, then ſtretch a line oth ſides of the intended ditch, and rit with the e hard by the ſame, ſlanting inward; for if the be ſeven quarters wide, it muſt be five deep, ſlop- o a foot in breadth at the bottom; then cut the or ſurface of your ditch, and lay a gang or row of irſt ſpading along by the brink of the ditch, ſlop- t the face according to the ſlope determined, with a foot of table intercepting, becauſe ſo much will ble down by the froſts, *&c.* On the top of that ne row of quicks, their tops ſtanding up a little rds the ditch: cover their roots with fine ſmall , and lay another ſpading above them, and, if will, lay another row of quicks above that, every ppoſing the mid-interval of the other, and ſo co- n the reſt of the mould till the ditch be finiſhed; always ſure to put good earth next the quicks, you ſhould bring it from the high-way or a ridge d adjacent to it; and every year ſcour the ditch- apping up the earth about the quicks: or a far way is,

 caſt half of the earth that comes out of the s to each hand, and quicks in both ſides, and ill make an invincible fence; for then the

hedge

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nd adjacent to it; and every year ſcour the ditch-
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er way is,

o caſt half of the earth that comes out of the
nes to each hand, and quicks in both ſides, and
will make an invincible fence; for then the

hedge grows up on both ſides of the ditch, and the ter betwixt makes it frightful: but that I am aga the common double, which is two ditches near another, and the earth which comes out of both betwixt them with a row of quicks in the face of ditch, is, becauſe here the quicks are obnoxious to croping of cattle; beſides they take much ground, the quicks are too much burdened with earth; ra if you be for ſuch, make a little ſpace betwixt of ground, where you may plant the hedge.

V. But if you would have a row of trees pla round by your ditches, then make theſe two dit the breadth of a walk aſunder, but parallel, and in mid-interval plant one ſingle row of trees, and two hedges at the back of the ditches: here ſhall have two excellent walks of ſhade, nor is ground loſt between theſe hedges; you may have hay, and in a large quantity. And in effect, th the beſt way that ever I thought upon for incl and ſheltering our grounds and plantations: you alſo make the interval betwixt theſe hedges w ſo as you may have two rows of trees.

VI. Now for fencing the quicks, in all their ſe ſorts, from the croping of beaſts, as indiſpenſibly ceſſary while young.

If the hedge be planted all along the bank o ſide of the ditch, then the ſtrong ditch with its caſt to both ſides will fence it; and if you think that ſufficient, ſet, ſtake and raiſe a hedge on the of the bank, or rather, which is indeed much be cuttings of thorns ſet there in a ſpade-bit trench, backed; or for want of theſe, back up the ditch turf, which is like half-ditching. But all this there is but one ſide of them fenced, and that the paſture; therefore no beaſt can come on th ther ſide to eat the foggage, except tethered ho

if you make the hedge or hedges and trees be-
xt the two ditches, you may caſt half of their
th to each hand, and back them as is ſaid, which
ces from all hands moſt elegantly. And if you
nt your hedges in the face of the ditches, the ſame
king on each hand will alſo fence them.

But where you plant trees at a great diſtance through
r fields or parks, you may fence every particular
by cutting a little trench round, four foot from
tree, and about two foot wide, facing it handſome-
up like a ditch, laying one row of turfs or ſpadings
ve another, till it be three foot high from the ſur-
e, backing them with the ſmall earth or ſhovelings,
tering inward to the tree: here the tree muſt be
h planted; tho' the more the ſoil inclines to wet,
the ſourer it be, plant ſo much the higher above
ſurface: you may ſtick ſome briers or thorns on
top of this ſtump.

## CHAP. V.

## w to propagate and order FRUIT-TREES.

### SECT. I.

THE only fruits for this country are apples,
pears, cherries, plumbs, and apricocks, and
aches at ſouth-walls, currans, gooſberries, raſpber-
s, *&c.*

Before I begin, I ſhall premiſe ſome obſervations on
affing, *&c.* a ſure means to obtain fruits of the de-
ed ſpecies, and that in a ſhort time; for by taking
e twig or bud of ſuch a ſort as is a good fruit, and
ars well, and graff or inoculate into a proper ſtock,
u are ſure to have the ſame fruit; becauſe the graff
mineers, although it may have a little ſmack of its
ck whereon it is graffed: and you may expect fruit,

becauſe it may have actually the fruit-buds, as bei taken from a bearing tree. But if you ſow the ſee they will be long before they come to bear, and length perhaps bring no fine fruit ; and for the ſeed graffed trees, they will not bring the ſame fruit: pea and apples will rather bring a fruit of the nature the ſtock whereupon they have been graffed ; and though you ſhould take a ſcion of the ſame, and gr in itſelf, that will not alter the fruit, nor better t tree.

We can alſo be ſure of the deſired fruit, by cu tings, layings, and circumpoſition, but from ſuch a always dwarfiſh and ſhort leaf'd trees, as wanting main root, which all ſeedlings have : hence ariſe one reaſon, why ſtocks ſhould be raiſed from the ſee ſuckers are not ſo clean and luſty, therefore not able to nurſe the graffs, and they are apt to ſend ſuc ers again : only I look upon plumb-ſuckers as ve good, becauſe when they ſpring off a root at a diſtan from the ſtem, they ſtrike a good root of themſelve very much reſembling ſeedlings : moreover you ma graff on a root, or a ſtock ſprung off that root, in chap. I. § V. and VIII. which is near equal to ſeedling.

The ſeeds of crabs, or wild apples and pea may be fit to make ſtocks of for ſuch trees as are d ſigned for the fields, or more rugged grounds ; but f a cultivated ſoil I would chuſe the ſeeds of finer fruit and ſo the julian-plumb is the beſt ſtock for ap cocks ; or for want thereof, any other white plum with great ſhoots, although it holds on any plumb ; b we reject itſelf for a ſtock, as being too ſpungy, a not ſo durable : but peaches and nectarines take o ly beſt upon peach ſtocks : ſo cherries on geens, a plumbs upon plumbs.

Gooſberries and currans need not graffing; they do
ll by ſuckers, layers, and cuttings beſt of all.

To make dwarf-apples graff or bud on the para-
e, the Dutch creeper or bittern-ſtock does beſt, or
y that hath burry-knots, codlings, redſtreaks, &c.
arf-pears on the quince; but no pear holds well on
hat I have tried, excepting the red-pear, achan, and
gevil; but you may re-graff for varieties: and if
u be very curious for theſe ſtocks, which I am not,
u may cut them at the ſpring, when ready for graf-
g, within two inches of the ground; and at Auguſt
ne twelve months, inoculate in that young ſhoot,
l perhaps they will proſper the better. But I think
ffing in the roots of pears will produce dwarfs.

Dwarf-cherries may be graffed on the morella, or
the common red cherry; or on that red geen ſpo-
n of in chap. III. § II. which is more dwarfiſh than
black; but they do beſt for dwarf when they are
ffed on the Corniſh cherry.

I. The mellow, warm and light ground is beſt for
its; and altho' the beſt, warmeſt and lighteſt land
lds moſt excellent corn, yet the ſtrong, ſtiff, cold or
iſt, yields not ſo good fruits, plants, graſs, hay,
Apples affect a pretty rich loamy ſoil, tho' they
l bear in clay, mix'd with lime, dung and turf.

Pears will proſper well enough, where the ſoil is
x'd with gravel; but both apples and pears are bet-
reliſhed in warm grounds that are not over moiſt,
n in cold and wet: yet there are ſome grounds that
e ſweet moiſture, others ſour, which laſt is very
, and therefore muſt be helped by draining, and
lication of proper medicines; ſee chap. II.

Cherries, plumbs, apricocks, peaches, affect a light
rp ſoil, thoroughly prepared and mixed with rot-
manures. As to their propagation;

By graffing are raiſed apples, pears, cherri plumbs, quince, medlar, walnut, cheſnut, filbe ſervice, *&c.*

By inoculation or budding, apricocks, peach nectarines, almonds, gooſberries, currans, app pears, plumbs, walnuts, *&c.*

By ſuckers, currans, goosberries, barberries, r berries, quince, vine, fig, mulberry: it is the wh mulberry that feeds the ſilk worm; but that's little purpoſe here.

By layers and circumpoſition are all ſorts raiſed.

By cuttings, are currans, gooſberries, vine, qui apples, eſpecially theſe with burry-knots; but g berries, currans and vines do beſt.

By nuts and ſtones, are walnuts, cheſnuts, filbe almonds, peaches, plumbs, cherries.

By kernels or ſeeds, are apples, pears, quin goosberries, currans, barberries, vines, mul ries, *&c.*

I have told whereupon to graff apples, pears, c ries, plumbs, apricocks, peaches; and as for quince, you may graff it on itſelf, or on the h thorn; almonds on itſelf; medlars on pears, or the ſervice; filberds on the hazel; ſervice, wal cheſnut, goosberry, curran, all on their own kind

III. In raiſing the ſtocks, always obſerve, T apple and pear ſeed muſt be ſeparated from fleſhy ſubſtance, and ſpread to dry a little, eſpe ly the cyder-marce, leſt it heat; you may roll ſand to help the ſeparation; keep it in a couch of ſand till winter paſs, then ſow it as ſoon as the f are over; it comes up that ſeaſon.

For raiſing cherries or geens, ſee chap. III. peach, plumb and almond ſtones, muſt be uſed i caſes as cherries; only you may break the p ſtones.

Uſe the quince ſeed as apples. As for the reſt, I have
ewed how they are increaſed, in the laſt ſection,
d how to perform the ſeveral ways in chap. I.
But you muſt prepare a ſeminary and nurſery, as
fore for foreſt-trees, ſee chap. III. § I. Sow every
cies by themſelves, keep them clean of weeds; and
next, or ſecond year after the ſeeds riſe, if they
ot luſtily, draw out the biggeſt firſt; tranſplant them
o the nurſery in ſingle rows, at two foot interval,
l half a foot in the rows, for conveniency in hoe-
, graffing, pruning, &c. and obſerve to prune the
t and ſide branches in planting, as I directed with
eſt-trees: only, when you have got them to a
nvenient height for graffing, you may cut their tops,
make their bodies ſwell the ſooner; altho' this be
permitted with foreſt-trees: however graff and
culate while the ſtocks are young, before they be
inch diameter, and they will ſooner heal the wound:
them have a year's ſettlement in the nurſery before
graff; but you may inoculate that ſame enſu-
ſummer after planting, eſpecially if they be very
and luſty. Next year after graffing remove them
a wider diſtance, *viz.* three foot one way, and a
t the other; prune their roots at every removal,
t they may provide for a well-ſhapen head; cut
m near now while young, if you would have all
ir branches of an equal greatneſs, and of proper
er, as I ſhall inform you.

n ſetting your ſtocks in the nurſery, I preſume
will ſet every kind by themſelves, *i. e.* pears with
rs, and apples with apples, &c. And, when you
f or bud, write down in your nurſery-book their
ies as they ſtand, *viz.* begin at the end of ſuch
urſery, and ſay, The firſt row is graffed with ſuch
rt, and ſo forth; and, if you have more than one
a row, then ſet in a ſtake betwixt each ſpecies,

and ſo write thus; From ſuch an end of ſuch a r
to the firſt ſtake, are ſo many of ſuch a ſort or
cies; thence to the ſecond ſtake, and ſo many to
other, *&c.*

IV. When you tranſplant fruit-trees into orchards,
as I directed with foreſt-trees in groves; plant
deep, neither trench too deep; but tempt the ro
by baiting the ſurface with dungs, to make them
ebb within the reach of the ſun and ſhowers; th
fore mix the earth in the holes, which ſhould be
or eight foot diameter, with rotted nolts dung,
earth well turned, ſweetned and prepared, as in ch
II. cover, delve and hoe their bulks, as in ch
III. § III. And, for further improving and keep
your fruit-trees in good caſe, ſee § VI. of this ch
ter. Prune their roots at every removal, as in
reſt-trees: experience forbids me to make excep
of the peach, or any other, as ſome do: always p
portion their heads to their roots by pruning:
here *note*, that, as foreſt-trees are trained up
high bodies, and unlopt heads; ſo fruit-trees
low bodies, their heads lopt, and branches topt;
therefore are eaſily proportioned.

Standards of four years old, may be planted ou
nurſeries into orchards, and alſo wall-trees of
years old.

The ſeaſon of the year is as ſoon as they give
growing; if the leaves be not off, cut them, ex
a little tail of their ſtalks: it is true you may p
any time in winter, the weather being open; but
ther let the froſts be over, and the ſpring appro
ing, if you have miſſed the fore-end of winter, w
is the better ſeaſon.

For ſtandards, are apples, pears, cherries, plu
gooſberries, currans, barberries, quince, wal

nut, filberd, ſervice: But I think all theſe deſerve
a place in the orchard.

or walls are apricocks, peaches, nectarines, al-
ds, vines, figs, currans, apples, pears, cherries,
nbs, *&c.*

n the ſouth-ſide of the wall, plant apricocks,
hes, nectarines, vines, *&c.* On the eaſt and weſt
, cherries, plumbs, apples, pears, *&c.* On the
h ſide, morella-cherries, ſome pears, ſome apples,
ans eſpecially, and raſps, *&c.*

hen you elect them in the nurſery, hang ſticks
at them figured, and write the ſame figure on the
r at their name, to diſtinguiſh their ſpecies; and
wards, when planted, write them as they ſtand.

Begin betimes to prune your fruit-trees; ſpare
not while young; reduce them into a good ſhape
order while ſuch, ſo will they not only ſoon o-
ow the wounds, their branches being but ſmall,
alſo, when they ſhould come to bear fruit, ſhall
eed to be cut ſo much; only purge them of ſuper-
es; and this is the way to make trees fruitful as
as pleaſant.

me ignorants are againſt pruning, ſuffering their
to run and ramble to ſuch a head of confuſion, as
er bear well nor fair; for the root is not able to
tain ſuch, far leſs fruit too, and therefore is their
ſo ſmall and imperfect: in the mean time, the
ſpends its ſtrength, and ſo cannot live long, nor
good ſervice in its time; yea, ſometimes the
is not ſo much as able to bear ſuch monſtrous
. I knew one windy day proſtrate above half a
of ſuch in a little orchard.

hers again that are for pruning, uſually run on
ther extreme, by cutting too much and untime-
nd ſome ſparing what they ſhould cut, and cut-
uch as they ought to ſpare: but the general er-

ror, even amongſt the learned, is, that they ſp them when they ſhould prune, *viz.* the very firſt, a ſecond year eſpecially; yea the firſt five or ſix ye and then they fall a-maſſacring; at which time branches being grown, ſome of them greater than thers, now run away with all the nouriſhment from ſmaller, in ſo much that no man can reduce them i order again, having thus neglected the time; althou you ſhould endeavour it by cutting deep, or exter nating theſe great branches, which, I confeſs, is next remedy; but then, as theſe wounds bring c kers, hollowneſs, *&c.* ſo doth the work retard th bearing fruit. And, indeed, it is about the time t trees ordinarily begin to bear fruit, that theſe unſk men begin to prune; and the more they are thus in the head, the more they ſpring out to wood, the leſs fruit they bear. But experience has ta me to begin while young.

And when you do begin, conſider on the he of the body; for, as high trees are unprofitabl too low trees in orchards are inconvenient; for a and pear ſtandards, two or three foot: plumb cherry, three or four foot; dwarf and wall-t half a foot: there cut the top that runs ſtraight wards, making it to ſpread out in branches ro ſuffer no branch to aſpire beyond others in he nor any to croſs, rub, or gall one another; and w ever branch or twig you cut off, cut cloſe and by the body or branch, except in the caſe o trees and great branches, as I obſerved in pr foreſt-trees: and in toping of branches, cut cloſ ſmooth immediately above a leaf-bud, ſlanting d wards to cover the wound; and when you p ſpare the fruit-buds, the full ones I mean, excep ſee them too many; then purge by the knife: wiſe, if afterwards you find more fruit knotted tree can be able to nurſe to perfection, thin them time.

But your firſt work is to proportion the head to the ot by pruning; cut the tops at a convenient height, t the tree may grow equally furniſhed round; for tting, as it diminiſheth, ſo it forms and ſhapes the ad, inſomuch as it furniſheth with new young ſhoots, t may be trained as you pleaſe.

Standards ſhould have but four arms breaking out a head, opening equally round; theſe dividing into anches, and again ſubdividing into twigs. And that u may the better underſtand what to cut, you may nd under, go about, and look up through the tree ere you may ſpy ſuperfluities: keep them clear, d, open within like a bell, and level on the top; ke ſome larger opens towards the ſouth, for the rance of the ſun-beams; let no branch grow croſs ough the heart, nor ſhoot ſpring up therein; mind- always to prune ſuch as croſs, rub, and gall one other, as is before-noted; and any branches, ſhoots, twigs, that grow not the way you would have em, cut them at the place whence you think they ll ſend forth ſhoots, which may lead them the way u deſire them; cut cloſe, ſmooth and ſlanting, at back of a leaf-bud, tending that way. By this I ng trees to order.

Wall-trees eſpecially ſhould be cut near while ung, that they may ſend forth ſmall ſhoots, for fur- ſhing your walls from the bottom equally; and if u continue to top them every year at a convenient ight, perhaps about half a foot above the laſt, that ll make them ſhoot all their branches of an equal iformity of greatneſs, height and thickneſs, ſo that long, bare, or naked branch, may be ſeen there, ither one or two great, and all the reſt ſtarved and all; which is the common fault of our wall-trees, and is occaſioned through neglecting to cut while yo even the firſt year, as above.

But altho' a tree may be right begun, and ſo go on, yet one year's neglect, or wrong pruning may ſ it. For as I was once pruning wall-trees, an inge ous perſon ſtanding by, ſaid, I cut them too low; ledging thereby, the wall ſhould be long uncover deſiring me to cut them a little higher. I told h that was wrong; but, to ſatisfy him, I cut two of th about eight or nine inches higher than I deſigned, ſhould have done. The next year theſe two trees about a foot naked round, and above the ſame crow like neſts, while the reſt were equally and orderly niſhed; when he beheld this, he changed his opini and I was obliged to cut exactly where I ſhould h done the preceeding year, which was now a little bel the middle of the naked place, and this put them ſeve years behind the reſt of bearing fruit.

You may nail them at Michaelmas that year planting, and continue ſo to do at the ſeaſons herea deſcribed: Prepare double plancher-nails, and tags hats, which is better than leather; ſhape the tags bout half an inch broad, and betwixt three, four, five inches long, making a gaſh with the knife near ends by folding, to put through the nail; then ſpr the tree, laying, plying, and nailing on every individ branch by itſelf, all at equal diſtances from one anot not cloſe in one place, and wide in another; and none croſs the other; the ſuperfluous, and theſe t will not ply eaſily, and the exuberant or luſty that r the reſt, muſt be cut away.

Well ply'd trees will appear like a peacock's t ſpread; drive the nail but half way in, and on the per ſide of the branch, elſe it will lean and gall; a very nailing alter the old nails, and beware of pinch

e young branches by making the tags or binding too
ght.

The time for pruning old planted and hardy trees, is
y time betwixt the fall of the leaf and the ſpring; but
the froſts be over before you prune thoſe that are
w-planted, young and tender, and before the ſap
e; otherwiſe the froſts will penetrate the wounds,
d make a ſore: but if you muſt cut before the froſts,
cauſe their heads may be obnoxious to the winds,
h are ordinarily the new planted ſtandards, then you
y cut a little at ſpring, and cut off cleanly the pieces
t, as is before noted. Alſo let the froſts be over
fore you prune your wall-trees; only I uſe to let
ches bud forth a little before I prune them, other-
e pieces of their branches ſometimes periſh after
knife.

And beſides, you muſt rub off all unneceſſary buds,
d pull up ſuckers and weeds from the roots: you
ſt alſo give all your trees a mid-ſummer pruning,
ich is ordinarily about the end of June, and begin-
g of July, a good time to cut any ſhoots of this
r: but I prefer pinching the ſmall branches which
to be taken off with your finger and thumb; be-
ſe if they are cut with a knife, they will ſoon pre-
e to ſet out new branches, or at leaſt new buds,
ich they will not attempt to do when they are pinch-
ſuch ſhoots or buds as tend not only to the de-
ming your trees, but to rob them of that ſap, which
y be otherwiſe ſpent in nurſing the tree and its
ts, thin and purge theſe gently, to let in the ſun,
not to ſcorch the fruit: this is alſo the time of
iſhing your trees with pedeſtals or bearers; but
ſpring is the time of cropping or cutting their
, until the wall be covered; then crop at both
ons: therefore in re-pruning, ſave as many of the
lieſt ſhoots as are well placed, and cut them at the

third or fourth bud from the tree ; but cut quite
the luſtieſt and greateſt of this year's growth, whi
ignorant gardeners ſpare ; and nail up ſuch as are
ing up the defects of the wall.

You may go through them in harveſt, and pur
the fruit of ſuperfluous leaves, which hinders the ſu
but do it ſo, as there may be leaves ſufficient to ſcre
the fruit, and cut quite off the luſty ſhoots of this
cond ſpring, which rob the tree and fruit.

As for gooſberry and currant ſtandards train the
to a foot ſtem, with a handſome round but thin hea
theſe at walls, half a foot ſtem, with a well ſpre
head, ſupported with rods laid acroſs, faſtened w
nails and tags. Raſps may be in ſhadowy borders
beds, three feet row from row, and two feet pl
from plant, kept clean of ſuckers, weeds and de
wood, and dunged and dug once every two years.

But becauſe ſome years, in ſome places, we h
ripe grapes, eſpecially what goes under the name
Frontiniac ; therefore if you think a tree or two
them worth your while, plant them at a ſouth-w
in a pure and fine mould, not wet, ſour and cru
but a light ſweet ſoil, mixed with ſome cows du
rotted in heaps with the mould. Plant ebb, a
trench not deep ; prune them every year low in
bruary, and at midſummer. Cut off the luſty you
ſhoots and tendrils, betwixt the ſecond and third jo
above the fruit, and in Auguſt purge it of ſuperflu
leaves, but reſerve ſo many as may ſcreen the frui
little.

There are ſome ſorts of fruit-trees that will bl
and bear themſelves to death, when young or mid
aged ; from ſuch, cut moſt of the blowing buds, a
thin the head to make it ſhoot again.

I got ſome cherries, and other ſtone-fruit fr
Holland, which took this decay ; wherefore in

ſpri

ring, I cut off the blowing buds and the branches, ar the place where the tree headed, reſerving only me buds for receiving the ſap, in caſe they ſhould ve put forth at the middle of the body, or a little ove ground; this made them ſhoot to wood. There-re I conclude, that by this, and delving about, you y help ill-thriving trees.

There are alſo ſome apples and pears, that will be l of falſe-bearing buds, that do not blow: ſuch ve got more head than the roots can well maintain, d conſequently have not ſtrength ſufficient to ſpare p for bloſſoms, far leſs for fruit, which by pruning d thinning the head, and by ſlitting the bark of the dy in the ſpring, may be made afterwards to bear ell, when they have put forth new ſhoots at the ad.

Some trees there are that will not bear of them-ves till they be old; but if you cut off the head of e ſhoots, as ſoon as ever the ſpring-ſhoot is over, ich is at true mid-ſummer, and take out ſome great ughs then; if you mind your time, and do it with ſcretion, you may force that tree to put forth blow-g buds, and blow and bear the year following, as ſhall inform you in the next ſection. But,

VI. One main buſineſs is to incloſe your planta-ns; avoid planting too deep, too dry, too cold, or moiſt, and guard your orchards from winds, by nting two rows of foreſt-trees at leaſt, round with-t the wall, the breadth of a large walk, or rather y feet therefrom; for trees at that diſtance give eater protection from winds than thoſe planted near-to the orchard walls, with thickets of the ſame on e weſt, north and eaſt, but eſpecially on the ſt; yet mind regularity, as alſo obſerve my me-od of planting and pruning, and ordering their lks of ſix and eight foot diameter: but when the trees grow old, and their feeding roots ſpread far broad; you cannot reach to feed them with dungs i this narrow compaſs; therefore enlarge it, or othe wiſe confine them a little ſooner, and hinder their ga ding too far, by digging a circle round the tree, pe haps eight foot diameter, and cut all the roots cle off that hath run out, applying freſh and ſweet moul ſo ſhall they emit fibrous or feeding roots in thi ket, which may be ſupplied with refreſhments once two or three years, as ſhall be required; and thus t roots will cauſe trees that are apt to ſpend more wood than fruit, alter therefrom, and the ends of t roots cut off, and their but-ends raiſed up a little, w ſerve as ſtocks to graff upon. But this method do not now obtain, as there are plenty of ſtocks now our nurſeries.

VII. When you would enrich your worn-out pl tations, if the ground be poor and dry, add well r ten dung prepared and mixt with ſoil: the water th ſoaks from a dung-hill is excellent; for it will me the roots, and enrich the trees. If the ground be co and moiſt, add pigeons dung, or aſhes and ſoo which is alſo excellent, if it be leopared with unſk ful dunging, or by noiſome weeds that grow abo ſuch roots where the owner is a ſluggard, and b ches or nettles moles, mice, toads, &c.

If you obſerve the premiſſes, you may prevent th diſeaſes, ſuch as ill-thriving, &c. but if you have, do neglect, and the diſeaſes are begun, for inſtan cankers, cut them clean out, covering the wou with a plaiſter of cows dung and clay compounde if the bark be peeled by hares, rabbits, or mice, ap a plaiſter of the ſame; but 'tis better to prevent the three, by ſwaddling the trees with ſtraw or hay-rop unlooſed in ſummer, and renewed every winter, your fence cannot guard them. Ill-taken off branch d branches broken or rotten, muſt be cut off clean d ſmooth. If any trees be bark-bound, which is e miſery of many, and eſpecially foreſt-trees, ſlit em in ſpring through the bark on both ſides, with a rp knife, from the head to the root, and delve a- ut them; otherwiſe raiſe and plant them ebber, if deep; which is the common cauſe of this diſeaſe, gether with bad incloſures.

If jaundice affects them, cut off clean the diſeaſed od; if moſs, ſcrap or ſinge it off; but 'tis in vain attempt the cure, until you firſt remove the cauſe; ich you will find to proceed from ſome malignity the roots, whether the diſeaſe be bark-binding, can- s, *&c.* and this moſt commonly happens by ill nting, and not incloſing, as among clay, water, im- etrable gravel, *&c.* Water muſt be drained; 'tis intolerable evil: cold clays, or ſtiff and hard ſoil ſt be trenched and mixed with dungs and ſoils of- ſtirred and fallowed, as above is directed. And ou would have trees to proſper, obſerve their na- e, and wherein they moſt delight, and ſo apply and them accordingly.

VIII. And for deſtroying vermin, there are traps for les of ſeveral forms: beſides you may watch and e them up with the ſpade. And for mice, you may e traps from Holland, or for want thereof, pots be ſunk in the earth where they haunt, till their ths be level with the ſurface, half full of water, ered with a little chaff, wherein they drown them- es; and ſo do tods, aſps, *&c.* Caſt away the earth re the ants lodge, ſupplying its place with ſtiff : place cow-hooffs for the wood-lice and ear-wigs odge in all night, and ſo ſcald them early in the ning. Pour ſcalding water in the neſts of waſps, hang glaſſes of water mingled with honey, where would not have them frequent.

Daſh water on the trees for caterpillars, by t
hand-pumps which we get from Holland. Gather ſna
and worms; ſhoot crows, pyes, jayes, and ſpread n
before your wall-fruit for their preſervation.

See part III. how to gather and preſerve fruit, a
how to make cyder, *&c.*

## CHAP. VI.

### Of fruits, herbs, and roots for the KITCHE

### SECT. I.

ALL the fruits whereof I ſpoke in the laſt chapt
are for the kitchen or table, but they grow
trees or ſhrubs, yet there are ſome which fall in he
the tendereſt whereof are,

Melons; theſe you muſt raiſe on early hot-beds, t
method of making whereof ſee in chap. II. § VII.
full deſcription of the melon, cucumber, and po
pion culture is given in the kalendar for the month
February.

Strawberries are a very fine and delicate fruit, a
are eaſily increaſed, but beſt by the ſmall plants tak
from their mother-plants in Auguſt, by which mea
they will be ſufficiently rooted, ſo as not to be ſpu
out of the ground by the froſts in winter. Dung, del
mix and prepare a rich middling warm ſoil; prune th
roots and tops, and plant them in ſtraight lines, fo
rows in a bed of four feet broad, and ſuffer them n
ver to over-run, but keep each ſtock by themſelv
ſtill taking off all their ſtrings; for tho' ſome people pr
pagate them from their runners, experience taught
that practice was quite wrong, thoſe runners pro
cing nothing but runners, blind flowers and no fru
Weed and hoe them well; and in September c
them within two inches of the ground, and lay co

ng over the bed, if in a ſandy ſoil, reſerving their
ps free; but rotten horſe dung is beſt, as they re-
ire a rich loamy ground in a warm ſituation; this will
uch improve them, ſo as they will not need renew-
g for three or four years; but longer than that ſpace
time they do not proſper, but turn ſtocky and bar-
n.

Artichokes are a fine and laſting fruit, and are in-
eaſed by off-ſets chiefly planted in the ſpring, in a fat
d well cultured ſoil, light and warm, enriched with
eep or horſes dung; plant them in ſtraight lines,
out three foot diſtance, having prun'd their roots,
d cut their tops within half a foot; water them, if
edful, and ſtill cut away their under and hanging
aves, and hoe the weeds as they begin to peep; when
eir fruit is ſpent, cut them within three inches of
e ground, and delve and cover the plot over with
d rotten dung, keeping their tops free: in April
lve down the ſame, and take off their ſuckers, ſlip-
ng them off carefully, leaving two at moſt to each
ck for bearing, and they will flouriſh three or four
ars; but it will be proper to make new plantations
ery ſpring for a ſucceſſion of crops.

Great beans muſt be planted early in the ſpring, as
on as the great froſts are over, in a deep rich ground,
two foot interval, and half a foot in their rows;
eſe when full ripe, cut and bind in little ſheaves for
d, and lay on trees to dry.

Plant kidneys in April, in a light and warm ſoil,
pport them with ſticks: the oriental kidney is the
ſt ſort.

Peaſe that you would have early, ſow in the full
oon of November, if in a warm place; but do not
uſt too much to them: ſow in February, and hence
onthly till June, in an open, light, warm, dry
l, that you may have them till the froſts ſurprize
them;

them; and if they ly on the bare ground, they will ſo
er ripen by reflection : but if you would have th
fruitful, ſet ſticks amongſt them while young for th
tendrils to climb on, and keep them always clea
weeds : when ripe, you may eaſily win ſome for ſe
but ſow not every year on the ſame plot ; to cha
the ground improves them. I prefer the ſetting th
by lines, two rows in the bed, as part I. chap. V. §
make the holes exactly by the lines, with a dibble
inch and an half deep, and two inches diſtance, a
ther, or the ſame hand fallowing, and put one in e
hole ; then ſmoothe the bed with the rake-head, wh
fills the holes, and covers the peaſe : one pound ma
more ſervice thus than three otherwiſe ; 'tis ſoon p
formed, and they ſpring orderly.

II. Of ſallads and pot-herbs ; the choiceſt ſallad
aſparagus : ſow its ſeed in March in good grou
and tranſplant that time twelve months into an exce
ing rich and well mixed ſoil of rotted dung and li
earth ; taking care that this dung be ſix or eight inches
low the roots of the aſparagus : you may ſtretch line
long and croſs the beds, and mark with the edge of
rule ; then gather little huts of earth at the croſſin
whereon you muſt ſpread the roots of your aſparag
two on a hut ; but do not top their roots : you m
perceive their points are like the runners of liquori
then cover the ſets with very rich earth, three inc
over, which has been lying a year in compoſt : th
cannot abide wet grounds, and weeds will quite deſt
them ; at the approach of winter cut their ſtalks, a
cover their beds with old rotted hot-bed dung ; the w
ter rains will waſh in its ſubſtance to their roots ; at ſpri
before they peep, remove it, and looſen the earth
mongſt them with a fork, and cover them near h
an inch with the mould raked and leveled, but do n
tread on them. Follow this direction yearly, and

ſo

or five years it will be excellent for cutting; cut biggeſt and tendereſt a little within the ground; hurt not theſe ready to peep. The ſeed is ripe n red.

ou may have early aſparagus, if you plant ſome g roots on your early hot-bed; which about a th hence will ſpring, and then die off.

rſlain may be ſown on the early hot-bed; it can- endure deep interring; ſow it on a fine mould duſt, and only clap it a little with the ſhovel; e on the cold bed, but in fat and fine ſoil, through ummer in drills, for convenience of weeding and ng: and, if you pleaſe, tranſplant it when two s long; reſerve the early ſown for ſeed, till their grow blackiſh, then pull and hang them to dry, ub out.

you ſow purſlain, ſo muſt you lettice, by ſeeds at the ſame ſeaſons; but the winter or corn- l in Auguſt: they love a fat ſoil ſomething moiſt, for winter more dry. Suffer theſe for ſeed to run nd only clean off the under and withered leaves. ripe when it begins to fly with the wind, pull it, ay it on a cloth to perfect; then rub it out in a ay.

w creſſes at the ſame ſeaſon: and plant terragon ff-ſets in the ſpring.

e ſmall chervil by ſeeds, as creſſes: as alſo, t; but it continues many years, ſtill yielding

mpier grows at the ſea-ſide in Galloway, but not ll in our gardens.

ccory and endive muſt be ſown by ſeeds, in June July; when they have five leaves, tranſplant into a rich border, watering them well until root; ſo ſoon as they turn buſhy or thick of in the middle, tie them up regularly with matſtrings in dry weather, watering well; and in weeks they will be fit for uſe, by ſhowing you white leaves in the middle, twiſting out below the ings; then lift them, taking off the green leaves the inner white leaves; they make a fine ſallad.

Sorrel riſes by off-ſets, ſome alſo by ſeed, in beginning of April, in a good fat ſoil, a little ſh ſix or ſeven rows in the bed, weeded all ſummer, cut near the ground in September. In two or years replant it in another place, for it ſoon im the ground of the place appropriate for it.

Broad-leafed ſpinage grows by ſeed only in F ary and March, but the narrow leafed ſown in th ginning of Auguſt, is the moſt profitable; cut it i beginning of October, and it will ſpring afreſh, an ready for ſpring-ſtoves; then reſerve ſome uncut ſeed; it proſpers well in a very fat earth, not too

And ſo do beets, which are alſo propagated ſame way; ſow them in the ſpring only.

Sow beet-card in the fatteſt land, and when thing ſtrong you may tranſplant: they have ſee next, not that year wherein you ſow them.

Order burrage as ſpinage; it is alſo an annua bugloſs; but it continues many years.

Marygold may be ordered as burrage, and wh rach as ſpinage.

Parſley is raiſed by ſeeds in February and M they bring forth their ſeeds next year, whereby muſt be yearly renewed.

Sow ſellery in a light fat ſoil, eight rows in th as parſley; it continues long, yielding ſeed yearly the firſt; and ſo doth ſmallage and alexander may be blanched as ſuccory and endive, viz. ſown in March, you may tranſplant at midſum a very fat and fine earth, half foot deep furrows foot between the rows, and four inches in the

as it grows up, gather the earth at its ſides from
intervals, leaving the top free ; and ſtill as it grows,
h it up in dry weather, ſo ſhall it be blanched for
nter-ſallad.

aiſe garlicks and ſhalot by off-ſets in March, in a
and fat ſoil, eight rows in the bed : I uſe neither-
ing nor twiſting their ſtalks; but when their fibres
n to rot in the latter end of July, take them up,
ſpread to dry a little, and houſe them in a dry
n with board floor for uſe, and replant in Sep-
ber.

eeks by ſeed in April, in a fat ſoil, though ſome-
ſtiff; in June you may thin them by tranſplanta-
; prune their roots and tops, ſet them at three
s diſtance, and continue to crop them till Octo-
The Engliſh, or rather Scots ſeed, is beſt.

iſe onions by ſeeds in March, in a rich, warm,
mould, well mixed with rotted compoſt and ſifted
ns dung; give them a thin coat or covering of
; ſow alſo in the beginning of July for ſhibols;
ot worth the pains to win their ſeed.

nt off-ſets of ſyves in ſpring, ſix rows in the bed,
ich and low ground.

lly-flower is a fine colly ; ſow it on the early hot-
or it is hard to get winter plants through to pur-
ſow thin and ebb, and carefully preſerve them from
when young : water but gently, and that only
moſt dry ſeaſon : when their leaves are three
broad, tranſplant them into a very fat and well
oil, at two foot diſtance ; prune their roots, and
worm knots, cut them away ; and in ſetting,
heir hearts immediately above ground : all along
hem clean of weeds, under-hanging and wither-
ves, and keep ſnails from them. If the ground
eed be good, you may expect good heads ;
if you ſpend not altogether before froſt, which
ſpoils

ſpoils them, take them up in a dry day, and tye th
in pairs to hang in a dry room for uſe. The beſt ſ
comes from Candia.

There are many cabbages; ſow the ſavoy, and ſ
tender ſorts, as colly-flowers, altho' not quite ſo t
der; ſow the great, white and red, in the full m
in July; plant them forth in October at three f
diſtance, in well dunged ground; ſet ſome alſo
March: but then the gardener finds multiplicity of
ſineſs; therefore it is his wiſdom to put as much w
by hand as can ſuffer it, at leaſt to have all his grou
fallowed before winter. You may hang up your c
bages in November, as colly-flowers; but plant ſo
of the beſt and hardeſt for ſeed, up to the neck: W
they ſhoot, ſupport with ſtakes and ropes; when f
cut and lay on a cloth to perfect: but chooſe the
right ſtem in the heart and its branches, rejecting
lower branches.

Catch ſnails and worms that gnaw the young ſpr
ing plants, and ſet nets for birds at the ſame ti
The reaſon why old cole is full of green worms
dry poor ground never weeded; or otherwiſe un
lified dungs, and unſeaſonably applied: If they
trench, mix, *&c.* as in chap. II. that their gro
may be clean and ſweet, they ſhall ripen acc
ingly.

Common colworts are uſually ſown at ſpring; pl
ed in ſummer, and eaten through winter, and at ſpr
when other green herbs are ſcarce; you may alſo
and ſet them with cabbages, and reap their ſeeds
cordingly.

III. Of ſweet herbs, as,

Clary; raiſe it by ſeeds and off-ſets in April,
which time, you may ſlip and ſet tanſy, ſage, c
mint, balm, winter-ſavory, thyme, penny-ro
wild-marjoram, maudlin, fennel, *&c.* Prune t
fi

ores, and plant in a garden ſoil, ſix rows in the bed;
ey all continue long; but cutting their tops in grow-
g time, makes them more durable; and cut them
within a handful of the ground in Auguſt, that
ey may recover againſt winter. You may likewiſe
w the ſeed of fennel, thyme, winter as well as
mmer ſavory, dill, ſweet baſil, *&c.* in April, in a
arm well cultured ſoil, ordering them as above; the
ree laſt are annuals. If you would have ſweet mar-
ram early, raiſe it on the hot-bed: the ſweet baſil
quires the ſame: ſow it alſo the latter end of April,
a warm fat ſoil, eight rows in the bed: you may
w it in July, and tranſplant when two inches high
a warm border at a ſouth wall; its ſeed, with that of
ſil, comes from hotter countries. Sow roſemary ſeed
April, or at the ſame time: take its ſlips or cuttings,
d twiſt them a little at the ends, and dibble in good
l, on a ſouth-wall border; but cut not their tops:
ey eaſily root being watered in drought with ſoap-
ter; you may ply it to the wall as ſhrubs.

IV. I am now come to roots: they require a light
rth, deep trenched, fat ſand mixt with ſheeps dung:
convenient that it be dunged a year before, be-
uſe new dung makes them fork.

Plant liquoriſh off-ſets and runners in February in
s ſoil, well ſtirred and mixt; after which do not
ad, except in the furrows, ſix rows in the bed, and
ver all the intervals with litter topt with ſand, but
the plants be free; for this ſerves to keep out
ught the firſt ſummer; keep them always clean of
eds, and cut their ſtalks near winter: let it ſtand
ee ſummers in the ground, and in November take
p thus; begin at one ſide of the plot, and make
ench the whole depth of their roots, taking it out
efully without breaking it, a the face of the ſame,
ting the earth ſtill behind as you proceed; then cut

off the plants, to divide carefully, and lay them among moiſt ſand in a cellar till ſetting time : and becauſe i ſtands three ſeaſons, you may have three ſeveral pla tations ; ſo ſhall you have it to take up yearly, if yo plant it accordingly.

Raiſe ſcorzonera by ſeeds and by off-ſets, *that i* by parting the tops of the root : ſow it in the ſprin or when its ſeed ripens, promiſcuouſly in the beds : continues many years in the ground, and grows ſti the greater, and is in ſeaſon at all times for eatin tho' it run yearly to ſeed.

Order carvy as ſcorzonera : its roots are eaten parſnips.

Raiſe skirrets by ſeeds: when their ſtalks begin wither, fall a ſpending them ; and as you break o their roots for uſe, lay their tops or ſets in ground c vered a little till the ſpring for planting. I caution you before to change the crops ; theſe you ſpend n before the froſts come, houſe hard among very d ſand, that you may have them when you will, rather be barred from them by the froſts : theſe roots whi come from the tops or ſets are always ſo ſticky, the is no eating them ; they love a moiſt rich ſoil.

Sow parſnips by ſeed, only in March, promiſcuo ly over the bed, but thin ; houſe them with skirre and cut quite off their tops, leſt they grow amon the ſand ; reſerve ſome of the beſt untaken up ſeed, which will ripen the next ſeaſon ; chuſe t middle ſtem ſeed.

Beetrave may be ordered in all caſes, as parſni except that you may begin ſooner to eat them, *viz.* ſoon as they are big enough, tho' they laſt as long, ſides theſe you pickle : if in ſummer they offer to to ſtem and ſeed, cut down their ſtems to the grou

hich will make their roots ſwell, they delight in a
ch clay.

Sow carrots as beetrave.

Turnips by ſeed in April, May, June and July, pro-
iſcuouſly over the bed, very thin, and ſcarcely any
vering of earth : the earlieſt prove not beſt. When
ey riſe, thin them; late turnips may be houſed, as
rſnips, and ſeeds reaped accordingly.

Horſe-raddiſh grows by off-ſets, and laſts long too.

The garden-raddiſh by ſeed only; for early ones you
ay raiſe them in the hot-bed caſes; hence you may
ve every twenty days, with other ſallading through
mmer, becauſe it quickly ſhoots for ſeed. Sow black
ddiſh in Auguſt and September for winter; theſe
d next ſeaſon.

Potatoes being cut in as many pieces as you pleaſe,
ovided there be an eye at each piece, muſt be plant-
in March, five rows in the bed; plant not deep,
ither in wet or ſtiff ground; ſpend them with parſ-
ps, and in houſing ſpread them only through a broad
or.

See part firſt, chap. V. for the orderly planting of
chen-herbs.

V. Weeding, I think, may be accounted the moſt
terial part of gardenery. The learned Evelyn takes
ice of it; his directions are, "Weed and hoe be-
imes; continue weeding before they run to ſeed,
which is of extraordinary importance both for ſav-
ng of charge, improvement of fruit, and the neat
naintaining of the gardens; wherefore, ſays he,
eep your weeds down, that they grow not to
eed, and begin your work of hoeing as ſoon as
hey begin almoſt to peep; by this means you
vill diſpatch more in a few hours than afterwards
n a whole day; whereas, if you neglect it till
hey are ready to ſeed, you do but ſtir and re-

“ pair the earth for a more numerous crop, and yo
“ ground ſhall never be cleared.”

And this agrees with what I had written myſel
*viz.* deſtroy weeds while young; for when they ha
grown ſtrong, and got deep rooting, they'll not onl
take the nouriſhment from the good plant, but the
will be ſuch difficulty in grubbing them out, that th
good ſeed or plant is in danger of being deſtroyed
but if you ſuffer them to bear and ſow their ſeed
then, beſides that they exhauſt much more of the ſu
ſtance of the ground, you ſhall find the work int
lerable, for they'll poiſon the whole ground, inſ
much that one year's ſeeds will coſt many years wee
ing; and therefore prevent theſe things by keepi
down the weeds, ſo ſhall your work become eaſy, an
the gardens handſome.

In beds where hoes cannot go, you muſt weed wi
your hands on both ſides, ſitting in a furrow on a ſtra
cuſhion; pull up the roots cleanly, taking the help
the weeding-iron where needful; but make uſe of t
hoe in all the intervals, drill-beds, nurſeries, furro
tables or paths, whereby one will cleanſe more th
ſome ſix by weeding with their hands; and if d
weather, they'll wither while they lie cut, otherwi
rake them in heaps, and ſpread again when rott
or carry them to ſome open trench or pit; and ſtill
viſiting your plantations, that as ſoon as you percei
a weed peep, you may check it.

## CHAP. VII.

## f ſome PHYSIC-HERBS, SHRUBS and FLOWERS.

### SECT. I.

MOST of the herbs in the laſt chapter were phyſical, therefore having ſpoken to them already, I ve the leſs to do here.

However there are ſome more, as garden-rue; I to environ ſage beds with rue, the ſoil not moiſt, xt with aſhes, not cinders; you may box borders th it, as well as lavender or hyſop; which laſt is o increaſed by ſeed; and ſo is golden-rod, fever-w, vervain, celandine: they laſt many years, and do wormwoods, comfry, Solomon's ſeal, cat-nt, calamint, elacampine, maſterwort, wall-pelli-y, garden-germander, betony, camomile, ſwallow-rt, ſouthern-wood, lovage, dwarf-elder, harts-ngue, maiden-hair, aſarum or aſſarabacca, drop-rt, birth-wort, horehound, ſpignel, agrimony, bri-y, bears-breach, ſea-holly, madder, rhubarb, dog-rcury, all which are eaſily increaſed by off-ſets in ſpring; and require to be cut a little above ground the beginning of autumn.

Angelica, ſpurge, ſcurvy-graſs, *&c.* are annuals, t yield ſeed the ſecond year from ſowing: you may w when ripe, or in the ſpring; but, if you prevent ir ſeeding by cutting, they will laſt longer.

Bleſſed-thiſtle, thorn-apple, tobacco, ſtinking-a-ch, oak of Jeruſalem, *&c.* yielding ſeed, and dy-g the firſt year; therefore ſow yearly in April. The rginia tobacco requires the hot-bed, the reſt a good light ſoil, as doth angelica. You muſt not bury nking-arach deep; ſow it as purſlain.

There are many more, beſides multitudes in t
fields, woods, glens, meadows, *&c.* of good u
many whereof you may bring into the garden, a
have done; but on theſe I ſhall not inſiſt, as I ha
given ſufficient directions for the kitchen-garden
part I. chap. V. for the different ways of propagati
in part II. chap I. and how to order the ground in ch
II. I do not approve of planting the clod with th
brought out of the fields, for it rots and turns ſo
and ſo kills the plant, altho' you may keep the clod
bout it till you come home; but then part it off ca
fully; prune their fibres a little, make the holes w
the trowal, and plant in a co-natural earth to that
their wonted abode, well ſtirred and aired, which
an excellent mean to make all plants proſper, a
therefore diligently to be obſerved.

II. Of ſhrubs that loſe their leaves in winter;
choiceſt whereof are,

Roſes of many ſorts; they are increaſed by ſuck
and layers. The muſk may be budded on the eg
tine, and ſet at a wall. The double yellow bears f
eſt flowers; you may bud the ſingle yellow on a Fra
ſort, and rebud the double yellow thereon, as I h
often done on the ſingle, planted as a ſtandard, ſha
in ſummer, and kept clean of ſuckers and ſuperflu
buds; and any that blow not freely, may be ſli
the five diviſions of the hoſe.

Prune your roſes after the flower is paſt, *viz.*
fore the full moon in October; cut behind a leaf-
and cleanſe them of dead-wood; and if you deſire
flowers, ſuffer but one ſtem on a root, and kee
low, and every fifth year cut them down to the gro
renewing their earth with old cow dung.

Jeſſamines, honey-ſuckles, pipe-trees, *&c.* are pr
gated by ſuckers, layers, and cuttings; ſee chap.

Mezerion by ſeed, as hawthorn; they lie as l

Of ſhrubs that are ever-green, there is box, ſavine, bor-vitæ, tamariſk, privet, &c. by ſuckers, layers d cuttings, in April: a ſhade, and fat ſoil, are neceſ- ry for them, till rooted.

The cherry-bay is an excellent green, and not very t to blaſt, there is alſo lauruſtinus, philyrea, ala- rnus, juniper; for I love not pyracantha, nor care I r ever-green oak and cyprus. They are all raiſed by eds, which muſt be couched in ſand before winter, d ſown in April to riſe that ſeaſon, except the juni- r, which lies till the next: tranſplant them the ſecond ar after they riſe in April; remove by a trowal, th earth at their roots, topping ſuch roots as appear thout the clod, and leſſen the head by thinning it. bſerve the directions about holly, for the ſame rules ay be obſerved for theſe to be ſpread on walls; but ve the tops of ſtandards: they all do well by ſuc- rs and layers alſo, except cyprus and juniper. Be reful to defend your ſeedling greens, while young, om ſpring blaſtings; yet do not choak them for want good air.

The pine, cypreſs, and ever-green-oak, the laſt e- cially, will ſcarce endure a removal from the ſe- nary; therefore ſow them in drills, two foot inter- l one way, and half a foot the other; and the next ar after they riſe, make a ſpade-bit trench between e rows, and work it cautiouſly, till you diſcover the nning down root at one ſide; which you muſt top h the pruning-knife, and level in the earth as it was: off ſome ſide-boughs, and thin the head; let them main two years, then remove and plant them, as is tructed.

Greens that are beſt worthy our eſteem, are Scots- for ſtandards, holly for hedges, the cherry-bay for rth aſpect walls, or barren creeping ivy, which will ther blaſt nor ſeek ſupporting.

There is ſtrawberry-tree, and tree-nightſhade, whi
are tender:

But Indian and Spaniſh jeſſamines, myrtles, olea
ders, and orange-trees, are yet tenderer; wherefore I a
not very curious of them; yet there are ſeverals in th
country who have them, and are at great pains in g
verning them, by ſetting them in caſes, with ſmall ſto
at the bottom, filled with earth, as thoſe mention
for fine plants, chap. II. § VI. and at the ſeaſon, cha
I. § IV. houſing them in winter, between the lat
end of September and beginning of May, giving the
freſh earth as they retire, and expoſe them, *i. e.* ta
out the upper exhauſted earth, ſtirring that below wi
a fork, not wounding the roots; and put in its pla
ſome rich and well conſumed ſoil, watering on all o
caſions with water wherein nolts dung is ſteeped, n
touching the leaves or ſtem therewith, whereof
ſparing while they remain in the houſe, except
ter long froſts, in whoſe extremity is uſed a little fi
free of ſmoak, ſunk a little in the floor; and in wa
days, free of froſts and fogs, acquaint them with the a
but ſhut them cloſe up at night again; and when you m
venture, expoſe them to the free air; yet even then
them a week in the ſhade, having firſt bruſhed them fr
duſt, &c. For my part, I had rather be in the woo
parks, orchards, kitchen-garden, or fields, meaſuri
planting, and improving the ground to the beſt adv
tage: however, I will here take a little turn among
flowers.

Thirdly, Of fibrous rooted flowers.

Gelly-flowers are the beſt, and are increaſed by
ſets, layers, ſlips, and ſeeds. A light loamy ear
well mixt with rotted ſoil of cows and ſheeps dung
year before-hand, is moſt proper for them.

Altho' I have raiſed many double, by ſeed of
own reaping; yet the ſureſt way to preſerve the b

by laying, becauſe ſeedlings are apt to die after
y have born a flower. How to lay, ſee chap. I.
I. Plant out your layers in ſpring, and give theſe
pots freſh earth, as the orange-tree, and yearly
nſe the old roots of withered, dead, and rotten
es, and leave not above one or two ſpindles for
er, if choice; and nip off ſuperfluous buds, leſt
y blow and bear themſelves to death; and if any
ſt, ſlit them as I directed with the double-yellow roſe.
midſummer, ſhade from afternoon's ſun a little;
e that blow ſupport them againſt winds; ſet hoofs
ngſt them for catching ear-wigs, their enemies;
er well in drought, ſparing their leaves; preſerve
choiceſt from too much rains, by laying the pots
their ſides; ſtrike off the ſnow when it lies too
ghty on them; theſe you incline not to bear ſeed,
their ſtalks as ſoon as paſt the flower.
aiſe ſtock-gelly-flowers by ſeeds or cuttings; the
l of the ſingle will produce double, but the more
ers and leaves the mother hath, the doubler ſhall
product be: ſow and plant them with carnations
elly-flowers; they affect the ſame ſoil with them.
rimroſes, cowſlips, and bears-ears, by off-ſets in
ſpring, or when the flower is paſt, *viz.* in July,
y affect a good natural earth, well mixt with rot-
nolts dung: the finer ſorts love a little ſhade in
mer; if in pots or caſes, you may tranſport them
uch at pleaſure.
reat varieties may be raiſed from ſeed ſown in
s, the ſoil as aforeſaid, mixt with willow earth in
guſt; take heed of deep interring bears-ears, ſow
m as purſlain; ſet the pots and caſes with them at
ſouth ſide of a wall from November till March, at
ich time they ſpring, and muſt be now retired a
e; tranſplant in July to flower next ſpring, and

neglect not to earth up ſuch as are apt to work ou ground, namely bears-ears.

There are many others, as,

Noble liverwort, ſpring gentianella, virgin's bo *&c.* and are increaſed by off-ſets in the ſpring, or ſeeds at the ſame time; as alſo columbins, hollyo cran's-bill, campions, and Conſtantinople-flow catch-flies, pinks, and ſweet-williams, throat-worts bell-flowers, *&c.* or daiſies, violets, ſpider-wort, d ble-marſh marygold, may be raiſed by off-ſets, any ti when ſpringing.

Of bulbous and tuberous roots, there are,

Tulips of great varieties; increaſe them by off when their ſtalks wither, which is generally ab June, July or Auguſt; this is alſo the ſeaſon for ot bulbous and tuberous roots; keep them in a cool, dry place, till September or October, and then pl them in a light ſandy earth, with fat ſoil, two or th inches below the bulb, ſo that the fibres of the bu may reach it: remove every year. They may raiſed from ſeed, but 'tis tedious.

Anemonies, the very ſame way as tulips, except t they require a rich earth, mixed with rotten dung, that it be not rank.

Apply this alſo to ranunculuſes of the fineſt ſorts

Cyclamine roots may be carefully parted in J and ſet in the ſoil fit for tulips.

Crocuſes and colchicums, as tulips; but they quire a mixed, rich, light ſoil: and ſo with

Iriſh bulboſes, which love a dry, rich bed; and with narciſſuſes, ornithogalums, hyacinths, aconit hellibores, *&c.*

Likeways Iriſh tuberoſes, crown-imperials, and lil of ſeveral ſorts, peonies, *&c.*

Indian tuberoſe is tender. See Eſq; Evelyn's k lendar.

here are many annuals may be ſown in pots, and
ged in hot-beds, and ſome under glaſs covers ; e-
ially theſe ſown in autumn.

marynthus, marvel of Peru, flos Africanus, con-
ulus, *&c.* In April you may ſow them on the cold
if good, fat warm earth ; together with double-
ygold, cyanus, nigella, delphinium or lark's-heel,
rrhinum, double garden and corn poppies, fox-
es, flos-ſolis, flos-adonis, *&c.*

ut if you would be further ſatisfied in the varie-
of flowers, conſult Mr. JUSTICE's Scots gardener,
iſhed *anno* 1754, at Edinburgh.

V. I ſpoke before of preſerving plants by houſing,
re are ſome that cannot endure the houſe, which
t be ſet at the ſouth-wall, the pots ſunk two in-
s below the ſurface covered with glaſs, in prepa-
boxed beds, with folding glaſs-frames to lift up
down at pleaſure ; becauſe in all ſeaſonable, warm
ks of the ſun and ſhowers, they may be diſcover-
of all that covers them ; thus treat choice ranun-
s, anemonies, amaranthus, *&c.* Neglect not to
ir their earth, as in § II.

lants ſtanding dry in winter, earthed up, or the
h made firm about them, are a good mean of
ſervation ; neglect not to cleanſe all your plants of
er and withered leaves, ſuperfluous off-ſets, *&c.*
chap. I. § X. and ſee part I. chap. VI. § VII. for the
rly planting of flowers. And I hope the reader
excuſe this brevity, ſeeing each chapter here
ld merit a book, neither will leiſure permit me
reſent to enlarge.

THE

# THE

# SCOTS GARDENE

## PART III.

## Of gathering, uſing and preſerving of FRUI

### SECT. I.

THIS neceſſarily depends upon the fifth and chapters of part II. of fruits and herbs eat Gather apples and pears when full rip ſpecially theſe for keeping, or for cyder, in a dry clear, but not froſty, in large baſkets, lined with mats, upon three footed or ſtanding ladders; at lay ſtraw under, if you ſhake them, and ſuffer no many at once to lie in heaps.

Gather apricocks, peaches, plumbs, cherries, your hands into clean baskets, when full ripe, ther for eating green, preſerving in ſugar, *&c.* d or for wines; as alſo currans, barberries, raſpbe gooſberries. The cucumbers for pickling muſt be *i. e.* before their ſeeds grow large; and gooſb for baking, boiling and ſauces.

Pull artichocks before they grow too hard theſe for pickling be the tendereſt. Let the pu for pickling be hard and old, lay it a day or tw the ſun to mortify; that which you eat green, m tender. Eat beans and peaſe green, but do not down the beans, nor break down the peaſe ſtalks

ſe left thereon cannot fill. You may cut off the
ans with a knife; and for the peaſe, hold with the
e hand, and pull with the other.

Gather aſparagus when tender, *i. e.* about three,
r or five inches high: lettice when young; but it
beſt cabbaged: ſuccory, endive, ſellery, blanched:
ſſes, parſly, chervil, burnet, when young and ten-
: ſorrel, ſpinage, beets, before they ſhoot for
d; and ſo is orach, marygold, bugloſs, burrage,
llot and onions when their ſtalks wither, tho' ſhi-
s are eaten green. Leeks any time before they
ot to ſeed: collyflowers when firm and white, be-
e they fly and divide their curds or turn yellow, and
abbage when hard: ſweet herbs any time, either
n or dried; but gather them in their prime, when
y are in flower, for drying.

iquoriſh is no diſh but drink, ſee part II. chap. VI.
V. where you will alſo find the ſeaſon of ſcorzo-
, beetrave, carrot, turnip, skirret, parſnip, po-
es, *&c.*

. Beſides what is ſaid above of planting and ſow-
t ſpring, ſummer, and harveſt; (for ſome have a
er continuance) as alſo of raiſing ſome earlier than
e natural way, by means of hot-beds, of retard-
others by tranſplantations, *&c.* there are ways
reſerving them out of the garden.

pples and pears may be carried into the conſerva-
or ſtore-houſe, in large baskets between two men,
h muſt be a cloſe, but cleanly and wholeſome
, floored, lined and cieled with boards, and ſhelves
e ſame all round; let them ſweat a little on the
, with clean oat-ſtraw under them; then dry and
hem apple thick on the ſhelves, opening the north
ows in fair, clear windy days, eſpecially at firſt, that
r may dry up the ſuperfluous moiſture; turn them
times, and in froſts cover them with mats, and

ſhut cloſe the houſe ; ſome of the choiceſt you m wrap in dry paper ſingly, and often viſit, that y may remove any that begin to rot, for they quic infect the reſt.

The way of preſerving cherries, plumbs, &c. wine, cyder, honey, or ſugar is eaſy ; as alſo of d ing them in the oven.

And you may pickle barberries in vinegar, and well dried, and ſugar ; to each pound and an half fruit, a pound of ſalt cold, and one quarter of pound of ſugar, beat to powder ; put them by lay in a well glazed earthen-pot, and when they have ſt a whole week well ſtopt, pour in a mutchkin of vi gar to each pound of fruit : if you find the ſauces ſharp, put as much ſugar as ſalt.

Range cucumbers the ſame way, and ſtrow ſalt vinegar till they be all covered, and you may ad little drill and ſweet-bay leaves for odour, and co them cloſe forty days unbroken ; then pare when y ſerve them up.

For artichokes, diſſolve two large handfuls of g ſalt, that is dried on the fire in a pan, in one mu kin of vinegar, and three of ſpring water ; mix th while the ſalt is yet hot, but put not the liquor on fire ; boil the artichokes till the leaves come off ea and while the cleanſed ſtools are yet warm, you have three nutmegs, three drop of cloves, one d and an half of mace, a quarter of an ounce of w pepper, half an ounce of cinnamon beat to fine p der, and ſtrew them upon ; then pack them in the with five or ſix ſpoonfuls of the liquor on each tum ; when all are potted, pour on the reſt of pickle, and ſtop them cloſe.

To pickle them green, put to every pound of cl ſed ſtools an ounce of ſalt dried, and a quarte an ounce of ſpices laſt named, mixed in a mortar;

ha

ving dawbed the ſtools full of holes, throw the pow-
r thereon when the pot is full ; melt as much butter
cover them two inches over, and when cold, cover
ſe with leather.

To pickle beetraves, boil and put them in glazed
ts, with as much vinegar as cover them all over,
pping them cloſe.

Aſparagus may be parboiled and pickled as arti-
okes, and ſo may green peaſe with cods , only the
ar pea which has no film.

Purſlain as cucumbers ; and ſo may taragon, ſam-
r, broom-buds, *&c.*

Lettice, endive, ſellery, *&c.* by blanching and ran-
g among ſand in cellars. Cabbage by hanging,
ots by houſing, ſanding, *&c.* as is ſhewed in chap.
. § II, and IV. Sweet herbs as well as phyſical, by
nging to dry in ſome open room, not in the ſun, as
ne adviſe.

Put Marygold flowers in paper bags near the chim-
y, till they paſs hazard of mouldineſs ; do juſt ſo
h true ſaffron : but becauſe few know how to or-
it, obſerve to part its off-ſets, and plant with o-
r bulbs at half a foot diſtance in the beds or bor-
s in July ; it flowers in September ; then be careful
go through in the mornings, and gather the ſaffron,
. the thrums that are in the middle of the flowers :
ears not well till the third, fourth and fifth year,
n you muſt remove it. But to the matter in hand.

III. As for the uſe of theſe fruits, the phyſicians
ow their medicinals, the cook their ordering in the
chen, and the gardener how to propagate and im-
ve them. For deſcription, and medicinal uſes, ſee
countryman doctor Moriſon's herbal ; and for me-
nical uſes, Evelyn's works.

To have diſhes and drinks of them, obſerve what
ows.

IV. Of diſhes; *viz.* apples, you may have bak without any ingredients except ſugar, roaſted alon alſo boiled, or fryed by ſhivers, with a little freſh b ter, ſtewed betwixt two plates; having cleaved and ken out their cores, add a little ſweet butter and ſug

Pears, you may have roaſted and boiled as apple alſo ſtoved, being cut in four, and put dry in a ſto or oven of white-iron, and ſo ſet in the pot amo water to boil; you may have both apples and pe green with cheeſe.

Cherries and gooſberries are excellent when bake apricocks, peaches, plumbs, cherries, currans, go berries, raſpberries, are all excellent diſhes green conſerved. Strawberries with red wine or ſweet crea

Cucumbers pickled for ſallad to roaſted mutton; if ripe, ſlice and lay them an hour in ſalt, and ſo p off their water. Artichokes are either pickled or fre boiled and eaten with ſweet beaten butter.

Beans and peaſe boiled with ſavory and thyme-got, ſerved up with ſweet butter beat among the and ſet a little on a coal or chaffing-diſh; but th are more delicious without thyme, &c.

Boil aſparagus in fair water, and ſerve it up w a little ſweet butter beat, *i. e.* tumbled in the ſau pan above the coal. The young ſhoots of colewo will ſerve the ſame way, and we have good brocoli ſo at this ſeaſon.

Purſlain may be eaten green with ſugar, and vine or oil, ſtewed with meat, beſides pickled.

Lettice, green as purſlain; and ſo creſſes, cher burnet, burrage-flowers, and wood-ſorrel.

Spinage is excellent ſtoves, being boiled with la or veal, with a little ſorrel therein, as alſo chop diſhes thereof with butter.

The ſame way uſe beets; alſo make green br of them with leeks, fagot of thyme, and parſl

ſome ſtoves and broths you may put orach, mary-
d leaves, violet leaves, ſtrawberry leaves, bugloſs,
rage and endive. In pottage put juice of ſorrel,
ot of thyme and parſley; and in moſt of broths.

n the ſauce or gravy of roaſt-mutton and capon,
in all ſtewed diſhes, bruiſe ſhallot, or rub the
es therewith.

ou may ſtove leeks with a cock. Onions may be
ed with a little butter if you want meat; alſo
ke uſe of them with roſt-meat, eſpecially geeſe, and
moſt freſh fiſhes in which parſley and thyme-fagot is
inly uſed.

oil collyflowers in water mixed with a little milk;
n pour it off, and mix them in the ſtew-pan with
et-butter ſeaſoned with ſalt, and ſo ſerve them up
ut boiled mutton.

oil cabbage with beef, reſerving the top of the
to pour on, when diſhed up, about the beef.

oil ſcorzonera, peel off its brown rind, wherein
ſiſts its bitterneſs; ſlice and fry it with butter.

hen skirrets are boiled and peeled, roll them in
r, and fry them with butter.

oil and peel parſnips, chop and bruiſe them well,
r on butter, and ſet them on a coal, and, if you
ſe, ſtrew a little cinnamon upon them.

arrots are ſo uſed, or only diſhed by ſlices.

eetraves are good when boiled, peeled, ſliced, and
n cold ſerved up with vinegar and ſugar; beſides
e pickled.

eetraves, parſnips, carrots, are very good ſerved
whole, or ſliced about meat, alſo turnips, with
roth poured thereon.

otatoes as parſnips; or, for want of butter, take
t milk.

. Of drinks, as of apples to make cyder; I can-
name our cyder-apples, for I uſe to mix all the ripe
nce in the orchard, that are of a fine juice, and

eaſy to ſeparate from the fleſh, and pears that ha
plenty of juice, and hard fleſh, though harſh.

In France they extol the Rennet-cyder, in Engla
the Hereford-redſtrake, which in France they ſet
nought; they ſpeak of genetmoil and muſts, fo
pippins and pearmains; and for perry, the Broo
bury and ruddy horſe-pear: but now the different ſo
beget alterations in fruits, beſides the climate; y
both defects may be a little helped, the firſt by uſ
all diligence to prepare the ground thoroughly, as
directed in chap. II. Fallowing is a moſt comme
able eſſay. The ſecond by graffing and regraffing e
ly. Good fences and ſhelter round the ground are
ry conducible.

To make this excellent wine, provide trough a
beaters, preſs and harbag, lagallon and tapering
barrels and hogſheads; for even by the common ſcr
preſs I have made a hogſhead of cyder in a day.
ſure your veſſels be ſweet, elſe you ſpoil all: whi
wine, ſack cask, or ſuch as kept cyder before. I ha
heard of cyder casks three inches thick in the ſta
which I believe is of great advantage in preſerving
liquor; but if any be tainted, put a little unſlac
lime-ſtone, and a little water in the barrel, and ſtop
cloſe; when it has ſtood a little while and jumbl
pour out and waſh clean, and that will cure it.

The fruit being gathered ripe, as before, let th
lie ten or twelve days, if ſummer-fruit: and near
double of that time, if winter ſorts; but late r
fruit that get froſts is not good cyder: mix not w
unripe ones, neither ſuffer leaves nor ſtalks amo
them. When they are ſmall beat, put them in
harbag within the preſs-fat, and ſo ſcrew them h
again and again; then empty it thereof, put in mo
and do as before: empty the receiver into the tap
ing-fat, and then cover it cloſe with a canvaſs
next day at that time, before you tun it, that

gr

roſs lee may fall to the bottom ; then draw it off at
tap three inches from the bottom, leaving the dreg
ehind, which may go among the preſſings for water-
yder. The clearer you tun it into the barrels, the
ſs it ferments, and that is the beſt cyder : for often
yder ſpends its ſtrength to free itſelf of the groſſer
arts ; therefore, while your cyder ferments, leave
e vent-pin looſe, but keep cloſe the bung for pre-
rving the prodigal waſte of its ſpirit ; and as ſoon as
e working begins to allay, drive the vent-pin dead
; and this will be perhaps in a fortnight, if it begins
work immediately, ſometimes not till the ſpring :
t keep faſt the pin till it begins to work ; and what
u mind to bottle of it, do it as ſoon as fully clear
d fine, which is ordinarily at ſpring. Put a plumb-
eat of fine white loaf-ſugar in each bottle ; and a-
ve all, make your corks faſt and cloſe, then ſet
ur bottles in the cellar among ſand.

To make the water-cyder, put a third as much wa-
r as you had cyder upon the new-preſſed marce, to
nd covered in tubs four or five days ; then preſs them,
d boil the liquor, ſcumming it till the ſcum ceaſe to
e faſt ; then take it off, for too much boiling waſteth
ſpirits, and put it in tubs or coolers, and when cold
n it up ; when done working, which will not be ſo
olent as beſt cyder, make the pin faſt, and in a ſhort
ne it is fit for drinking. A little ginger, cloves, ju-
er-berries, or ſuch may be boiled in it, if they
eaſe your taſte.

The making of perry differs not from that of cy-
r.

To make cherry-wine, to every pound of ripe fruit
mped, put a chopin of ſpring-water, and a quarter
a pound of fine white-ſugar ; boil the water and ſu-
, ſcum it, and put in the juice of your cherries ;
it boil up again, take it off the fire, run it thro'
air-ſieve, and when 'tis thoroughly cold, put it in a

ſtone-pot, and after ſix or ſeven days, draw it int bottles, putting a bit of loaf-ſugar in each; in a qua ter of a year you may fall a-drinking it: it will keep year: if you would have it ſtronger, then uſe no mor water than ſugar.

After the ſame manner you may make wine of raſp currans, gooſberries. Or,

Take currans very ripe, bruiſe and ſtrain them, an to every pint of the juice put a pound and a qua ter of ſugar into a ſtone or earthen pot, ſcum it ofte and at a week's end draw it off, and take out th ſettlings, and put in the liquor again: do this till it b fine, then bottle it; and at a week's end, if it be no fine in the bottles, ſhift it into other bottles.

Gather your gooſberries ere they be too ripe, an for every three pound of ſtamped fruit, uſe a chopi of water, and a pound of ſugar; ſteep them twent four hours, then ſtrain them; put the liquor into veſſel cloſe ſtopt a fortnight or three weeks; then dra it off, if you find it fine, otherways ſuffer it longe and if not yet fine, rack it.

It is uſual to make it thus unboiled, becauſe it co tracts a brown colour in boiling.

To every pint of raſps add a pound of ſugar; l them ſtand two days in an earthen pot, often ſtirring an bruiſing them: then put them in a woollen bag to han up twenty-four hours or more, till the liquor drop ou into a ſtone-pot; ſuffer it there till fermented an ſcummed, and at a week's end, or ſooner, if fine, bo tle it, and at another week's end ſhift it into fre bottles, that you may leave the ſettlings behind; th ſhift them ſo long as you ſee any ſediment, which yo may put in a bottle by itſelf.

Of ſome ſorts of plumbs, as damaſons, &c. may b made wine.

Th

That called Cherry-brandy, is a bottle half-full of
ns, filled up with brandy, ſometimes jumbled a
le, and in a month's time is fit for drinking; or, if
u put the like quantity of gooſberries inſtead of
rries, that will make the brandy very delicious.

The cherries beſt for wine, are blackheart and mo-
a. I think the red geen moſt excellent, ſee part
chap. III. § II.

Of gooſberries the great-cryſtal, and of currants
great Dutch-red, alſo the red raſp are the beſt.

To have ale of liquoriſh, ſlice it very ſmall, and
r water on it when at boil; then cover it cloſe till
t day; pour off this wort, and more hot water on
ſtand ſo long as to ſearch it thoroughly: add your
ts together, and boil them with a little dry worm-
od, or *Carduus-benedictus*; but the greateſt difficulty
o barm it when cold, as wort of malt: yet the
nger you make it, the eaſier it will take; or if you
e the conveniency of ſettlings of good wort of malt
oil with it, that will facilitate the work.

To have good metheglin, take one part of clarified
ey, and eight parts of pure water, and boil well
ether in a copper veſſel till the conſumption of one
f; but while it boils, take off the ſcum, and when
e boiling, and it begins to cool, turn it up, and it
l work of itſelf; as ſoon as done working, ſtop it
y cloſe. Some adviſe to bury it under ground three
nths, and that to make it loſe both ſmell and taſte
oney and wax, and taſte very like wine. I uſe to
dry roſemary and ſweet marjoram in boiling:
e barm it as ale, which I have practiſed effec-
lly.

I. To know what fruits and herbs to make choice
or our plantations.

The French fruit ſucceeds not well with us; in Eng-
d are good apples; but Holland excels for ſtone-
fruit,

fruit, eſpecially peaches and cherries, and Scotland pears.

The beſt apple for the table, is the golden-pip we have alſo rennets, ruſſets, &c. very good. for the kitchen, the codling, lidingtoun and ru with hundreds for both.

But the beſt pears for the table are Engliſh berga ſwan-egg, red-pear, achans, cuiſſe-madam, all of t excellent, &c. The wardens are good keepers kitchen-fruit, and multitudes more.

Of cherries, the Kentiſh and morella, &c.

Of plumbs, primordials, muſſel, imperial, &c.

The common and orange apricock, the Newin and nutmeg-peaches: peaches bear better with us apricocks.

The Portugal quince, and thin ſhell'd wallnut.

Of gooſberries, great white, great red, and yellow.

Of currants, the great Red-dutch, the White-du the great black.

Of raſps, both the white and red.

The great red-ſtrawberry, and the Virginian, w is more early.

Of artichokes, the great green and the red.

Great white beans, and white kidneys: of p chareton, hotſpurs, haſtings, and the ſugar-pea,

If you can get *hordeum nudum*, *i. e.* naked ba and ſow as I directed with peaſe, it yields an incre increaſe.

The Dutch aſparagus and cabbage-lettice. ſorrel that uſually ſhoots, not for ſtoves, &c. white beet or beetchard, and ſmooth ſpinage. C parſley and creſſes, ſhallot and roccumbol, Fr leeks, and Straſburgh onions.

Candy colly-flower, and our own great Scots cabbage.

riſp tanſy, and curled ſpearmint, ſweet fennel, and
mon roſemary, ſweet marjoram, and red ſage.
he black ſcorzonera and orange-carrot: the ſmall
d ſmooth turnip; ſmooth Dutch parſnip, and ſmall
diſh, clear as cryſtal: for more, ſee part III. chap.

And theſe are the fruits, roots and herbs, moſt
ble to our ſoil and climate.

# THE
# ETHOD
# OF
# ting an Acre of GROUND, with MBER-TREES and UNDER-WOOD;
## WITH
## Profits which will ariſe from that PLAN- ATION, in nine, ſeventeen, and twenty-five ars, after planting.

we conſider the many advantages that Great Bri-
ain in general hath received from timber of its
wn growth; how by its powerful fleets it hath
ed the dominion of the ſeas, and now enjoys the
fits of an univerſal commerce, without mention-
he advantages it affords to every particular owner
: It is wonderful to me, that the propagating of
er, a commodity ſo valuable and ornamental,
ſhould

ſhould be ſo little encouraged now-a-days among when our natural ſtore is ſo near being conſumed, t to all appearance, in a few years time, we may forced to ſeek it in foreign countries.

Now, if I may be allowed to judge in this caſ conceive, that the preſent decay of our timber, m depend upon one or other of the following reaſons

I. That the making new plantations will be an mediate expence to us: Or,

II. That we cannot expect to reap any profi ourſelves from ſuch plantations as might be made our times: Or elſe,

III. That many gentlemen, who are already maſ of woods, receive little profit from them for wan due care and management.

I ſhall paſs by the firſt and laſt of theſe objecti they being anſwered in the foregoing chapters; anſwer the ſecond, *viz.* That we cannot expect reap any profit to ourſelves from the plantations wh might be made by us: But I hope the method wh I ſhall herein propoſe, will give full ſatisfaction in point.

For which end I would recommend, that every p tation which ſhall be made, either in this preſent or hereafter, may conſiſt partly of foreſt or tim trees, for I know no barren-trees, as they are c monly called here, and partly of under-wood.

Now, the under-wood which I propoſe to be pla and intermixed among the ſtandards or timber-tr may be cut in eight or nine years after planting, ſo from time to time every eight years will produ very conſiderable return, as will appear hereafter ſtated account.

2*do*, The plants for under-wood, which will compaſs on every ſide the young timber-trees, not only ſhelter them from blaſts of wind wh

mi

ight be hurtful to them, but will alſo, by keeping off
e circumambient air, draw them into ſtraight and
ll trees, until they can ſhift for themſelves, and are
ong enough to bear the ſeverity of the weather.

But to proceed, let us make choice of ſuch ground
plant upon, as may not be thought proper for corn,
at leaſt ſuch as will yield only a poor crop of grain :
uppoſe ſuch land will be worth about five ſhillings
rling *per* acre by the year ; and by all means let it
, if poſſible, near ſome navigable river, for the great-
eaſe and cheapneſs of carriage : now, as I have be-
e hinted, that as the land is, ſo muſt we allot the
per plant for it ; I only wiſh it may be deep enough to
uriſh the oak and ilex, which are tap-rooted plants,
d therefore delight in deep ſoil.

Suppoſing then we are fortunate enough to meet
th an acre of ground proper for oaks; we muſt
t encompaſs it with a good fence, and then either
or plow the land at a proper ſeaſon, to lie fallow
ſome time, till the turf be mellowed and fit for our
rpoſe.

An acre of ground contains 160 ſquare perches or
ds, each rood being 16 foot and a half; this quan-
of land muſt be fenced about with a ditch ſix foot
de, three rows of quick-ſets planted upon the ſides
ts bank, at a foot diſtance from each other, and a
hedge on the top.

A labouring man, working for one ſhilling a-day,
y prepare nine foot of the ditch in length in one
, and cut ſtakes and buſhes, and make about five
d of the dry hedge in a day; ſo that he may pre-
e the hedge, make the ditch, plant three rows of
k-ſets, and pay the expence of them, after the rate
wo ſhillings *per* hundred, for about three ſhillings
perch ; ſo will the whole charge of making a fence
ut an acre of land, be ſeven pounds ſixteen ſhil-

lings ; but we may fence in two acres of land after
ſame rate, being 32 perches long, and 10 perc
wide, for nine pounds ſix ſhillings ; a pole or pe
planted with three rows of quick-ſets, will take up
bout 48 plants, ſo will there be required to plant ab
an acre, 2496 plants.

Thus having provided a good fence to defend
young plantations from dangers of cattle, and ot
inconveniencies, the next thing to be done is, to p
pare the incloſed land for planting ; which may be p
formed ſeveral ways.

Suppoſing the land to be incumbered in the w
manner with buſhes, whins or furze, *&c.* ſo tha
plough cannot be uſed upon it, then may it be
and cleanſed for about ſixpence the ſquare perch :
whole acre, if it be dug at that rate, will com
four pounds : But if the ground ſhould happen to
in that ſtate, that a plough can work in it, an
may be ploughed for about twelve ſhillings.

The land being thus prepared, one acre will
tain forty plants of oaks at 33 foot diſtance : an
I have hinted before, that all tap-rooted trees are
dangered by removing, and that, when they are t
planted, they ſeldom come to the perfection of t
which are raiſed from ſeed, and remain always in
ſame place ; I ſhall therefore recommend, that f
beds of good natural ſoil be prepared on the acr
land, at the aforeſaid diſtance of 33 foot from
other, and that in each bed, five or ſix acorn
planted, about four inches-deep, in February, w
ſeaſon I chooſe rather than the autumn, becauſe
over-wet ſeaſon of ſome winters might rot the ſ
or mice, ſquirrels, and ſuch like animals, migh
ſtroy them.

Theſe forty beds may be well prepared by one
in three days, at one ſhilling a-day ; two hundr

ns may be worth about ſixpence, and the planting them be worth about ſixpence more, which makes ll four ſhillings.

The acre of land being thus ſown with oaks, we y interſow the remaining part of the ground with -keys, which have been kept all the winter in dry d; theſe will turn to very good account; as alſo in ſeeds, nuts of ſeveral kinds, haws and ſloes, nſidering that the land is already dug or plowed for purpoſe.

One buſhel of aſh-keys may be worth two ſhillings, ſowing of them one ſhilling, and the harrowing ground after ſowing, will be worth five ſhillings re, in all eight ſhillings. When the oaks and aſhes come up, they muſt be hoe'd and cleanſed from eds; one man may do this work in three days, leav- the diſtance of three foot between the aſhen plants: expence of this weeding will be three ſhillings; for ckon a man's work at one ſhilling a-day, becauſe I poſe ſuch plantations will only be made in thoſe ces where land is cheap, and conſequently every g elſe is valuable in proportion.

The ſecond year we may draw ſome of the young s, leaving a ſingle plant in each bed: now it is ly, that all the acorns which were put into the und may not come up; therefore I would adviſe, the ſureſt way to have our expectations anſwered, n the ſeeds we ſow, to try the goodneſs of them re they are ſown; which may be done by putting n in water, and planting only thoſe which ſink kly to the bottom.

n acre of land thus fenced, dug, cleanſed and ted, comes to twelve pounds and eleven ſhillings, two acres dreſſed and planted in like manner, will eighteen pounds ſixteen ſhillings.

But if the land will be clean enough to admit t plough, then the charge of fencing, planting, &c. one acre, will be nine pounds three ſhillings, and t expence of two acres dreſſed in the ſame mann twelve pounds.

In nine years after this plantation has been ma the aſh-plants will be fit to cut for poles or hoo worth upon the place ten ſhillings a-hundred: if t plants ſtand at a yard diſtance from each other, the a of land will then contain about 4800 plants, which m be ſold for twenty-four pounds ſterling. The qui ſet fence muſt likewiſe be cut down, and will yield bout ten load of buſhes; we will ſuppoſe them o worth five ſhillings a-load, although near London t ſell for four times as much.

The whole charge of fencing, digging, and plant an acre of land, with oaks for timber, and aſh for der-wood, with the profit of the firſt nine years grow may be ſeen in the following accompt.

*Accompt of 9 years after* planting, *or firſt* cutting

| | £. | ſh. |
|---|---|---|
| Expence of fencing, digging, and ſowing an acre of land for timber and under-wood. | 12 | 11 |
| Intereſt of the aforeſaid ſum for 9 years, at 5 *per cent.* | 5 | 1 |
| For cutting 4800 aſhen poles, one man, five days, at one ſhilling a-day. | 00 | 5 |
| Rent of the land for 9 years, at five ſhillings *per* acre *per annum.* | 2 | |
| Nine years expence | 20 | 1 |

| | | | |
|---|---|---|---|
| Received for 4800 aſhen poles, at ten ſhillings a-hundred. | 24 | 00 | 0 |
| Received more for ten load of buſhes at five ſhillings a-load. | 2 | 10 | 0 |
| Nine years gain | 26 | 10 | 0 |
| Nine years expence | 20 | 13 | 6 |
| Neat profit of the plantation in 9 years | 5 | 16 | 6 |

After this cutting, we may cut again in eight years ime, and expect 4 or 5 poles on each aſhen plant.

*Accompt of* 17 *years after* planting, *or ſecond* cutting.

| | | | |
|---|---|---|---|
| RENT of the land for 8 years, at five ſhillings *per annum*. | 2 | 00 | 0 |
| xpences of cutting 19,200 aſhen poles, reckoning 4 to each plant, one man 20 days, at 1 s. a-day. | 1 | 00 | 0 |
| Seventeen years expence | 3 | 00 | 0 |
| eceived for 19,200 aſhen poles, at ten ſhillings a-hundred. | 96 | 00 | 0 |
| eceived more for ten load of buſhes, at five ſhillings a-load. | 2 | 10 | 0 |
| ained clear of expences by the firſt cutting. | 5 | 16 | 6 |
| he intereſt which might be gained on 5 l. 16 s. 6 d. in eight years, at 5 *per cent.* is about | 2 | 6 | 0 |
| Seventeen years gain | 106 | 12 | 6 |
| Seventeen years expence | 3 | 00 | 0 |
| eat profit of the plantation in 17 years time. | 103 | 12 | 6 |

*Accompt of* 25 *years after* planting, *or third* cuttin

| | | |
|---|---|---|
| RENT for 8 years, at five ſhillings the acre *per annum*. | 2 | 00 |
| Expence of cutting 19,200 aſhen poles, one man twenty days, at one ſhilling a-day. | 1 | 00 |
| Twenty-five years expence | 3 | 00 |
| Received for 19,200 aſhen poles, at ten ſhillings a-hundred. | 96 | 00 |
| Received for 10 load of buſhes, at five ſhillings a-load. | 2 | 10 |
| Gained clear of expences by the ſecond cutting. | 103 | 12 |
| The intereſt which might be gained on the aforeſaid ſum in 8 years, at 5 *per cent.* | 41 | 8 |
| Twenty-five years gain | 243 | 10 |
| Twenty-five years expence | 3 | 00 |
| Neat profit of the plantation | 240 | 10 |
| To which may be added the value of the 40 oaks then growing in the ſaid plantation, worth 10 s. a-tree. | 20 | 00 |
| In all | 260 | 10 |

By the foregoing accompt, we find that an acr land, planted as is directed, may produce 103 l. and 6 d. in the ſpace of 17 years, clear of all expe of planting, and value of the land; and the oak they are ſtill continued growing, will yet produ re conſiderable return to the owner, or his family r him.

By the example of this plantation, others may be de with different kinds of trees; and if the plant- has due regard to the ſoils proper to what he de- ns to plant, he may expect a return for his labour l induſtry, anſwerable to what I have mentioned in s account; and if his ground happens to be alrea- fenced for his purpoſe, and is capable of admitting lough upon it, he may yet reap a much more con- erable profit from his plantation.

V. *B.* Mens wages are here calculated at a ſhilling ay; but they may be had at eight pence a-day, ich will make the profit greater.

THE

# THE

# GARDENER'S KALEND

## NOVEMBER.

CONTRIVE or forecaſt where, and what you
ſow and plant. Trench and fallow all yo
cant grounds. Prepare and mix ſoils and com
thoroughly. Miſs not highway earth, or cleanſin
ſtreets to clay grounds. Make compoſitions of d
ſoils and lime.

Lay bare roots of trees that need it, and dung
old rotted manure, ſuch as require it. Plant all
trees, foreſt-trees, and ſhrubs that loſe the lea
ſo prune ſuch. Sow haſtings for early peaſe in
grounds ; but truſt not to them.

Gather the ſeeds of holly, yew, aſh, *&c.* ord
them as in part II. chap. III. Furniſh your nur
with ſtocks.

Shelter tender evergreen ſeedlings. Houſe
cabbage, carrots, turnips ; and any time befor
froſts, houſe your ſkirrets, potatoes, parſnip
Cover aſparagus, artichokes, *&c.* Sow bear
plant tulips, *&c.* Shut the conſervatory. Preſerve
choiceſt flowers. Sweep and cleanſe the wal
leaves ; lay up great quantities of them to rot for
er-ground, *&c.* Stop your bees cloſe, ſo tha
leave breathing vents.

This month is ſubject to violent winds, froſty
and great rains, taking their courſe by turns, t
great hurt of our gardens and plantations : it

ugh to guard againſt the pinching froſts, or ſhelter ny tender plants from the cold rains which fall at ſeaſon; but we muſt alſo be diligent to ſecure our t-trees, and ſuch foreſt-trees as have been lately nted, with ſtrong ſtakes, leſt they be blown down ſhaken by the boiſterous winds now coming from weſt; for nothing, in my opinion, contributes to roy the welfare of a young tree more, than to e it unguarded and expoſed to the mercy of the ds: the young fibres lately formed are broken, every part thro' which the ſap ſhould have its paſ- e to the head, is bruiſed and wounded, ſo that, for nt of free paſſage for the ſap, the top is not half plied, and the whole languiſhes.

Now make hot-beds for aſparagus, that you may e ſome in December; and if you are not provid- with roots in your own nurſery, you may take them n ſome plantation, which has never been cut, of r or five years old. Set the roots cloſe together, hout trimming; taking care that they do not come hin four inches of the dung, and that the buds are ered, at leaſt, four inches thick with earth.

Tis now a very good time to lay down branches of vine, eſpecially ſuch as we would have fruit upon following year, to be ſet growing in pots upon a le at great entertainments. The branches for purpoſe muſt be ſhoots of the ſame year, and ſo wn through the hole at the bottom of a garden- , that when it is filled with earth, there may be a ſonable number of eyes or buds above ground: a ng branch perhaps may leave eight or nine bunch- of grapes; and as the bunch is ſmaller, four or in proportion.

### Garden diſhes and drinks in ſeaſon.

CAbbage, collyflower, onions, leeks, ſhalot,
blanched ſellery and endive, pickled aſparag
purſlain, *&c.* Freſh parſnips, skirrets, potatoes, c
rots, turnips, beetrave, ſcorzonera, parſly and fen
roots.——Apples, pears, *&c.*

Cyder, perry, wine of cherries, raſps, curran
gooſberries, liquoriſh, honey, *&c.*

## DECEMBER.

TRench and prepare grounds. Spread compo
to get the benefit of froſts. Plant trees in nu
ries, and ſow their ſeeds that can endure it.

Gather fir-ſeeds, holly-berries, *&c.* Take up liq
riſh. Continue your care in preſerving choice c
nations from rains and froſts; and keep the gre
houſe cloſe againſt the piercing colds. Turn and ref
your fruit in a clear and ſerene day. Sharpen a
mend tools. Gather oziers and hazle-rods, and m
baskets in ſtormy weather. Cover your water-pi
with litter, leſt the froſts crack them. Feed weak b

This month, commonly called the black mon
is ſubject to every ſort of weather which is fatal
plants of a tender nature; all vegetables of our
mate ſeem now to ſleep. The days are ſhort, and
ry little warmth from the ſun makes every curi
lover of gardens wiſh for ſpring; tho' indeed,
now an ingenious gardener will ſhew his skill, in h
ing nature by art, to produce ſuch fruits and he
as ſhe is not capable of bringing forth without w
extraordinary aſſiſtance.

Guard againſt the violence of froſts, which c
monly begin with great ſeverity to reign in this mon

Pr

Prune orchard fruit-trees, and take away ſuch bran- es as make confuſion, covering every conſiderable und with the following mixture.

Take of bees wax, roſin and tar, each a pound; tallow half a pound; melt and mix them together; d immediately after amputation, dip a painting-bruſh this mixture, and cover the wound with it.

In open weather we may continue to ſow peaſe and ans, as formerly.

In froſty weather bring into the garden the neceſſa- manures for enriching the ground.

## Garden diſhes and drinks in ſeaſon.

Oleworts, leeks, &c. Houſed cabbage, onions, ſhalot. Several dried ſweet herbs. Houſed parſ- ps, turnips, ſkirrets, carrots, potatoes, beetrave, rzonera, parſly, creſſes and chervil; fennel-roots, kled cucumbers, barberries, artichokes, aſpara- , purſlain, ſellery and endive blanched, &c.

Houſed apples, pears, conſerved cherries, plumbs, ches, apricocks, &c.

Wine of apples, pears, cherries, liquoriſh and ho- , &c.

## JANUARY.

PRepare the ground, ſoils and manures. Fell trees for mechanical uſes. Prune firs: plant haw- rn hedges, and all trees and ſhrubs that loſe the f, in open weather; alſo prune the more hardy d old planted. Dung the roots of trees that need drain exceſſive moiſture: gather graffs before they out, and graff near the end of the month; begin h the ſtone-fruits. Gather Holly-berries, fir-huſks, . Secure choice plants as yet from cold and wet, earth up ſuch as the froſts have uncovered.

Feed weak bees ; you may alſo remove them.

This month is commonly froſty, and if we hav ny great ſnow in the courſe of the whole year, i about this time: and it is obſervable, that the piercing cold reigns chiefly at this ſeaſon: there whatever is nice and curious in our gardens, muſt be diligently looked after, eſpecially thoſe plants w are in hot-beds, by taking proper means to de them from the cold air.

Some plant ſtrawberries upon a moderate hot- to make them bear fruit betimes, but keep them too tender ; alſo plant mint, that it may not be w ing for ſallads in this ſeaſon. Remember to make beds frequently of aſparagus as you have uſe for

In open weather continue to trench ground, la it in ridges till you uſe it.

It is now alſo a proper time to compoſe earth mixing ſeveral ſoils together of different qualities.

Uncover the roots of trees that are too luxur cutting off ſome of their large roots, as well to their too great vigour, as to prevent their too bloſſoming.

If the weather be open, tranſplant all ſorts of ber-trees, having firſt prepared the places for the

In planting of trees, have due regard to the ner of the roots, that thoſe which naturally ſ near the ſurface be not planted too deep ; but, a as you can, imitate nature in this and all other den-work.

In planting trees for timber, always preſerv leading or upright ſhoots of the trees, prunin the ſuperfluous branches: chuſe rather to plant trees, than thoſe of a large ſize; a few years w ward your wiſdom in ſo doing; for where trees ſtood long enough in one ſoil to become larg

tely, they are hardly to be reconciled to any other,
atever diligence may be uſed.

Set traps for vermin, which are now very buſy a-
ut your young peaſe, *&c.*

Plant cabbages, turnips, parſnips and carrots for
d.

## Garden diſhes and drinks in ſeaſon.

Oleworts, leeks, &c. Dry ſweet herbs. Houſed
cabbage, onions, ſhalot, parſnips, skirrets, po-
oes, carrots, turnips, beetrave, ſcorzonera. For
ad, tops of mint, young creſſes, muſtard, radiſh,
ng lettice, onions, ſellery and endive; the tops
burnet and chervil, parſly and fennel-roots in
th.

ickled artichokes, beetrave, &c. Houſed apples,
rs, and other conſerved fruits.

yder and other wines, as before.

## FEBRUARY.

Lant any trees or ſhrubs that loſe the leaf; alſo
lay and circumpoſe ſuch for increaſe: ſee June.
ewiſe ſow all your ſeeds, keys, kirnels, nuts, ſtones;
the ſeeds of ſeveral greens, as holly, yew, phily-
laurels, *&c.* prune firs, *&c.*

ontinue to deſtroy vermin.

raffing is now in ſeaſon; ſee the laſt month.

rune all trees and ſhrubs, except tender greens;
and dreſs them at the wall; cover the roots of
laid bare the fore-end of winter, if there be a-
Plant hawthorn-hedges, willows, *&c.*

ant liquoriſh, peaſe, beans, cabbage: ſow par-
beets, ſpinage, marygold, and other hardy pot-
s.

Let carnations and ſuch ſheltered flowers get air mild weather; but keep cloſe the green-houſe.

Now you may remove bees, and feed weak ſtock

This month hath been commonly reckoned the we teſt in the whole year: and it has been obſerved, have rarely any laſting froſts which begin at this ſe ſon; but have taken notice, that when January h given us a good ſhare of froſt and ſnow, the weath in this month is commonly warm, pleaſant and d lightful; and if that happens, it is an admirable tim for planting trees, either for fruit, timber or ornamen if thoſe works were not compleated in the autumn.

Elm-layers ſhould now be gathered from the roots large trees, and planted in a nurſery, and young pla tations provided of all ſorts of foreſt-trees and ſhrub which are propagated from ſlips or layers.

Set acorns of the oak, cheſnuts and walnuts, a Ilex, and ſow bay-berries, all which come up t firſt year. But if the weather is bad, delay it t March.

Sow the maſt of aſh, beech, and ſuch other ti ber-trees as have been prepared a year in ſand, or therways they will be two years in the ground; as ſo the berries of the hawthorn, yew, holly, &c.

What I here mentioned concerning the prepari of ſeeds in ſand, is the common practice: but I am formed by a good author, that a certain man ſow holly and yew berries, which were two years old, a had not been prepared that way, which came up t firſt year without difficulty: and he adds, that he thered aſh-keys in the ſpring, and ſowed them imm diately, and they came up in like manner; but this nothing extraordinary, ſeeing that the aſh will f quently hold its keys two years without letting th drop, and at that age they are prepared of themſel to grow without any artifice.

Oth

Others ſay, that holly-berries being gathered and id in a heap in the houſe, without ſtirring them till e ſpring, thoſe which lie in the middle of the heap, ill not only be void of the pulp, or fleſhy part, but gin to ſprout, and then being immediately ſown, will me up the ſame ſeaſon. This may happen perhaps om the ferment which the berries would raiſe when ey began to ſweat.

Prune and nail your wall-trees, eſpecially apricocks, d all other ſtone-fruit.

Sow skirrets in light ground, where they may have me moiſture. It is held by ſome, that when the ots are about two inches long, they ſhould be tranſ-anted, to make them large.

Plant garlick, ſhalots, and rocambole for increaſe, light ground.

Set potatoes and Jeruſalem artichokes in heavy ound.

Tranſplant young cabbage plants for a crop, if that rk was not done in the preceeding month.

Sow aſparagus ſeeds in the natural ground.

Towards the end, begin to graft in the cleft, cher-s, pears and apples.

Now make your hot-beds for melons and cucum-rs, and continue to ſow every ten days, for fear of nger from the weather.

Melons or musk melons are multiplied by a ſeed hich is like that of a cucumber, excepting in co-ur, which in melons is of a pale red, and is not oad as that of others; of the culture of which we all here preſent you with a moſt ample account, as it s been delivered by the honourable Mr. John Evelyn.

The moſt undegenerating ſort of melons, are not rge, but of a middling ſize, the rind thin, faintly nbroidered, and without being ribbed or divided a-ng the ſides, or at leaſt very obſcurely: others there are which are whitiſh, ſome of ſlate-colour, red-ſl dry, yet melting in the mouth, and not at all mea but of an high colour and generous guſt. In a wo they are the only ſort, after trials of many hund kinds, I have cultivated with ſucceſs, and retai their good qualities more than twenty years with any conſiderable diminution.

Every gardener, now-a-days, knows how to r melons, but very few to govern them, the grea difficulty whereof is in the taking off ſuperfluities, cauſe them to knit and bear as they ſhould do; in der to which, obſerve theſe few directions:

The firſt thing appearing, after the ſeed is ſo and the plants pricked out from the firſt hot-bed i a larger hot-bed, are a pair of ſmall ſmooth lea which in France are called the ears. A few days ter, betwixt theſe comes up a ſingle leaf, which call the firſt leaf, as being on the firſt knot. Next this in the ſame place, and ſoon after, there app another which we term the ſecond knot: about middle of whoſe ſtalk, there ſhoots out another l called the third knot, which third knot is alw to be pruned off, but with care, and without wou ing the ſtalk or branch of the ſecond knot, u which that third did grow; it being from this p you find that branch to ſprout, which we call the leader, and is that which will ſend out a firſt, ſec and third knot; which third, and all other ſuch thi you muſt cut or pinch off, as you did the other, w out ſtaying for a fourth, or fifth, or more ſhoot It is from theſe knots and joints, that other bra es in like manner will proceed, knit, and form excellent fruit, provided the foot and orignal f has been well nouriſhed, in rich, warm and pro mould, and well expoſed. And the beſt mould is third old rotten neats dung, one third rich bl ould, and the other may be old rotten horſe dung, d one-half of white rich river-ſand; this muſt lie e year at leaſt in compoſt, to mix, incorporate and eeten before you uſe it.

I muſt not forget, that from the middle, likeways twixt the ear, and two firſt leaves, there frequent- riſes another branch, which you may abate or leave , as you find it likely to prove, eſpecially if a vi- rous one; but the leaf iſſuing from the middle of fourth joint, and ſeveral more beſides ſucceſſive- ſpringing out of one another, as you ſee the fourth m the third, I purpoſely omit, and have only figu- l, as ſuperfluous to the ingenious gardener.

When I tranſplant from this nurſery-bed, into the pared holes or ridges, and open meloniere, I com- nly place two roots together, unleſs I meet with extraordinary good plant, and then ſpare both the nches which ſpring from each ſide, betwixt the ear l haft, as before is ſhewn: but when I plant to root r each other, as I do when they are not very fair s, I totally reject both branches, which ſhoot from two oppoſite ears, to avoid that confuſion of thoſe ernumeraries which injure the principal ſtem and t itſelf.

Never ſuffer the root, or ſtalks of your melon-plants touch the dung; nor ſhould you water them im- derately; but when the earth is very dry, and the ſon exceſſively hot, refreſh and give the roots drink, thout deferring it till the ſhoots complain, when it y come too late; I water them in theſe periſhing ſons, two or three times every week; in the even- s when the ſun is ſetting; and at ſeven in the morn- ; and then cover them with matraſſes from ele- n till two o'clock, during the ſun's exceſſive vio- ce, which exhauſts and conſumes the humidity, ne- ſary to both roots and branches.

I cover my meloniere when it rains, leſt too m moiſture prejudice the fruit, all which requires a g deal of care, and no ſmall pains, though this reg proceeding is to me a real pleaſure. I alſo obſerv put over my dung eighteen good inches of the fore compoſt; for in this depth of ſoil, the melons p per much better than if they had but eight or inches depth, which is the very wrong practice of ny gardeners.

When the foot of your melon-plant grows o luxurious in branches, cut away the feebleſt of th leaving not above three or four of the moſt vigor and of thoſe whoſe knots grow neareſt to one anot and when the melons are knit, ſuffer not above tw pon each foot, chooſing ſuch as are beſt placed, neareſt to the main and principal ſtem, which ſh be thick, ſnug, and not too far above the ground theſe are knit, and beginning to form, make ch of the handſomeſt, that are well truſſed, with a t ſhort tail; melons with long ſtarts, ſlender and nar leaves, never prove worth any thing.

When you begin to cover with bells, raiſe ther upon little forks, as they neither reſt upon the frui branches, or quite exclude the air; but ſo as to the edges from bruiſing, and preſſing the tender and intercepting the current ſap.

It now and then happens, that there riſes a ſec branch from between the ears and two firſt lea though I mentioned indeed but one; but this is ſeldom, and you are ſtill to count them but one j or knot, though there will thence proceed a ſec third, fourth, and perhaps twenty or thirty more ther remote, if you let them alone, and be not lant to reſtrain and ſtop this exuberance in due t 'Tis true, they will preſent you with fruit at the tremities of their branches, but 'tis little worth

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ing ſo far diſtant from the root, that the ſap ſpends
elf in the tedious paſſage before it arrives, as you
ll find by the withered branches and dryneſs of the
ves, which ſhould ſcreen both branches and fruit
l they are ripe, as we ſee they do, where a melon
s a ſhort and ſubſtantial foot. A curious gardener
erefore ſhould viſit his meloniere from time to time,
d be cutting off all mutilated, ſtarted, and vicious
anches which annoy the plants; for theſe imperti-
nts will grow even to the view of one's eyes, and
ite impoveriſh the fruit, if not timely prevented.
owever, I prefer frames to bell-glaſſes in this climate
the propagation of melons.

Thus you ſee I am careful to purge the ſtem of all
e ſmall, ſtraggling, and unprofitable branches, from
ich there is no expectation of good fruit; whilſt,
ſerving thoſe that have well-knit melons on them
the ends of the branches, I conſtantly take away
e reſt of that branch on this ſide the fruit, which
viating into other uſeleſs wanderings, would rob,
d deprive the fruit of the nutriment derived from
e root; nevertheleſs, with this caution in pruning,
ſpare ſome leſs noxious branches to ſhade the fruit,
at it be not left quite naked, and expoſed to ſuch a
orching heat as would hinder its growth and matu-
y, which within forty days from its nativity, and
itting into fruit, arrives to full perfection. Obſerve
o if the vines of your melons offer to run out from
low your frames; ſet the frames up ſo as the vines
your melons may run; but obſerving always to lay
e compoſt preſcribed below the vines, as far as they
n, eighteen inches deep; they will invigorate the
es, and the dews they then receive will make their
it ſet apace.

Great and pompion-like melons are very ſeldom to-
ably good, as arriving to their bulk, either from

the nature of the ſeed and kind, or from ſuperflu
watering the ſmaller ones; wherefore, although,
ſaid, they cannot ſupport the too exceſſive heats,
leſs water you give your plants, provided you
them not to want it, the better; and that rath
little at a time than much: Once a week is for
moſt part ſufficient. As to this, therefore, you
determine and regulate your refreſhments with g
circumſpection, and judge by the nouriſhments wh
you conceive neceſſary to produce and maintain
foot with its branch and leaf deriving from it, w
out which no kind and genuine fruit is to be exp
ed.

When you would gather a ripe melon, you
have notice by its turning a little yellow; from
time within a day, as the weather proves, it does
dinarily ripen, and begin to caſt a grateful ſcent;
yellowneſs appearing in ſome part of it or other,
not ſeldom with ſome rifts or little chaſms about
ſtalk, &c. are moſt infallible indications of its b
left rather too long, than too haſtily gathered:
gardener muſt therefore not fail of viſiting the m
niere at leaſt three times a day, morning, noon,
evening, for this critical time of ripening. He
ſometimes find melons ripen too faſt, but they ar
dom or never good, as proceeding rather from a ſi
or vicious root, than from the nature of the plan
ſpecies of theſe I cultivate.

After twenty-four hours keeping, or the next
after it has been gathered, (for ſo long, contrar
vulgar opinion, it ſhould be preſerved in ſome
ſweet place, and not eaten immediately as it c
from the garden,) a perfect and tranſcendent m
will be full juicy, and without any vacuity; which
will eaſily diſcern, by rapping a little with your kno
upon the outſide of the fruit; the meat ſhould

dry, or but a little red, meazing out of the pulp, by no means wateriſh and fleſhy: to this add a million colour, a grateful flavour, and an high and y taſte.

Laſtly, reſerve for ſeed, that only which lies to- ds the ſunny ſide of the melon, which, being im- diately cleanſed from its mucilage with a dry linen h, reſerve in boxes or papers, in ſome temperate ſweet place.

## Garden diſhes and drinks in ſeaſon.

OLE, leeks, ſweet herbs. Onions, ſhalot, houſ- ed cabbage, ſkirrets, turnips, parſnips, potatoes, rave, ſcorzonera, carrots; beſides parſly and fen- roots.

ickled beetrave, artichokes, cucumbers, water ſes, and blanched dandillions: houſed apples, pears, other conſerved fruits, with cyder and other wines drinks as before.

## MARCH.

E-delve, mix and rake your ground for immediate uſe; delve about the roots of all your trees. Yet plant trees, or rather greens. Alſo prune , except the roſinous. Propagate by laying, mpoſition, and eſpecially by cuttings. Sow the of moſt trees and hardy greens. Cover theſe whoſe roots lie bare, and delve down the dungs lie about your young trees all winter, covering tter again, topt with earth, to prevent drought in ner: this is a material obſervation, and more eſpe- y for ſuch as are late planted. Slit the bark of ill ing trees. Fell ſuch as grow crooked in the nurſery.

ſery. Graffing is yet in ſeaſon, but too late for fruit; cut off the heads of theſe inoculated.

Set peaſe, beans, cabbage, aſparagus, liquo Sow parſly, beets, endive, ſuccory, bugloſs, burr ſellery, fennel, marygold: plant ſhalot, garlick; if it was planted in October it will be much be potatoes, ſkirrets. Sow onions, lettice, creſſes, nips, beetrave, radiſh, *&c.* And on the hot-bed, lyflowers, and, if you pleaſe, cucumbers, *&c.*

Slip and ſet phyſic-herbs, July-flowers, and o fibrous-rooted flowers. Be careful of the tender; piercing colds are now on foot. Turn your frui the room, but open not yet the windows.

Catch moles, mice, ſnails, worms; deſtroy f ſpawn, *&c.*

Half-open paſſages for bees; they begin to ſit, them cloſe night and morning; yet you may re them.

This month affords us very little variety of h for the table, for now the winter ſtores are al ſpent, and the roots which have been hitherto u are hard and ſtringy; and beſides, an underſtan gardener muſt, at this ſeaſon, new-crop his gr with herbs and roots, for the ſucceeding months.

In March, if your ground be great, and the nu of labourers proportionable, you ſhould have the ſure, with one caſt of your eye, to ſee them dig making up, ſowing, planting, hoeing, weeding, g ing, pruning, *&c.* For, in fine, before the mon out, the moſt part of the ground ſhould be take either with ſeeds or plants, which are to ſerve proviſion for the whole year. All the ground fore covered with dung, ought to be diſcharged o coverings, which are now grown noiſome, as ſoo they ceaſe to be neceſſary; and every thing oug breathe the free air, which begins now to cheer

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als and plants; you ſhould, at this time, have at
ſomething to begin to gather, either of ſallads or
h, of the new ſeaſon.

Garden diſhes and drinks in ſeaſon.

Oth green and houſed herbs and roots: alſo pickled, houſed, and conſerved fruits, with their wines,
the former months.

## APRIL.

Lant holly, yew hedges, and hawthorn too, if
not too forward. Ply and ſheer hedges. Nail
and prune wall-trees, &c. Plant firs, and other
ns. Slip and ſet ſage, roſemary, thyme, rue, ſa-
, and all other fibrous-rooted herbs and flowers.
ver and dreſs ſtrawberries. Plant artichokes, ſlip
and delve their plots. Set cabbage, beans,
, kidneys. Sow aſparagus, parſly, beets, and
card. Set garlick, ſhalot, potatoes, ſkirrets,
l. Sow onions, leeks, lettice, creſſes, radiſh,
, ſcorzonera, carvy, fennel, &c. And on the
ed, cucumbers, collyflowers, purſlain, ſweet mar-
n, baſil, ſummer-ſavory, tobacco, &c.
t ſtrawberries, violets, July-flowers, &c. Alſo ſow
ſeeds of July-flowers, &c. Sow all your annual
rs, and rare plants, ſome requiring the hot-bed.
oy moles, mice, worms, ſnails. Lay, beat, roll
ig gravel, and ſow graſs. Begin to your mow-
nd weeding.
en the doors of your bee-hives; now they hatch.
e weather is commonly unſettled in this month,
ights frequently froſty, and blighting winds from
aſt are ſtill to be expected. The new moon of
this

this month, which the French call the Ruddy Moon for the moſt part attended with deſtructive and viol winds, which endanger the tender ſprouts of pla and young knit fruit; therefore gardeners ought t careful how they yet expoſe any houſe-greens, or otick plants to the open air, or depend too much u the fair promiſe of a warm day or two.

If the weather be dry and windy, ſtake up all n planted trees, if that work was neglected in the ceeding month, watering them well once in ten da and fence your ſpired ſeedling onions from the wi for they are eaſily broken.

It is now that our gardens begin to over-run w ſnails and ſlugs, to the great deſtruction of our yo knit wall-fruit, and the greens of the kitchen-gar Many ways have been preſcribed to remedy this as to lay tobacco-duſt, ſoot, ſaw-duſt or barley-c round about the ſtems of plants, which indeed keep them off for a little time, but the firſt rain falls, gives them full liberty to paſs over theſe fo cations: neither are we more ſucceſsful in putting upon the ſtems of trees; for a few warm days dr up: But the moſt ingenious contrivance to keep theſe deſtructive vermin that I have ever met wi learned from a curious gentleman of Hertfordſh which is ſo cheap and eaſy, and ſo much to the poſe, that I believe few lovers of gardens will be w out it.

He directs to wrap about the ſtem of a tree, or three rounds of line, or rope made of horſe- ſuch as are commonly uſed to hang clothes up theſe are ſo full of ſtubs and ſtraggling points of hair, that neither a ſnail or ſlug can paſs over t without wounding themſelves to death: ſo that head of the tree, if it be a ſtandard or dwarf, receive no harm from them: if we ſecure a

, we muſt yet uſe a little more caution; for be-
s preventing their paſſage up the ſtem of the tree,
muſt faſten one of theſe ropes cloſe to the wall,
s to incloſe all the branches of the tree, and al-
ſpace enough to nail up the ſummer-ſhoots with-
the compaſs of the hair-line. Steep theſe hair-
s, before you uſe them, twenty-four hours in vi-
ar and gall, whereby all thoſe vermin will be de-
yed immediately.

eſpaliers of fruit-trees, it is only neceſſary to
p theſe hair-lines about the ſtems of trees near the
ts, and about the bottom of every ſtake, which
k ſhould be done in the winter, when the ſnails
laid up in their cloſe-quarters.

o preſerve collyflower plants, or other tender herbs,
ch are liable to be deſtroyed by ſlugs or ſnails, the
-lines may be faſtened about the edges of the beds
are planted in. It is to be remarked, that theſe
s are beſt for this uſe when the hair they are made
s very ſhort, for then they will be full of points,
compleatly armed againſt any attempts of theſe
dering vermin.

he ground is now in good order to receive the
s of thyme, and ſuch aromatic herbs; and this
k ſhould not be delayed longer than the laſt week
his month. Obſerve, that all ſmall ſeeds muſt be
ſhallow in the earth, and the larger ſeeds deeper
roportion, and again, as the ground is more light
ſandy, every ſort muſt be ſown deeper than in
y ſoils.

e may continue to make plantations of ſtraw-
es till the middle of the month, placing the plants
t eight or ten inches apart.

the weather be moiſt, it is not too late to make
s of jeſſamine, honey-ſuckle, roſes, and ſuch like
s.

Sow ſellery upon the natural ground, or upon decayed hot-bed, to ſucceed that ſown in March.

Sow now Spaniſh chardones in the natural gro for a ſecond crop; make holes for the ſeeds at about or ſix foot diſtance; put four or five ſeeds in each h and when they are come up, leave only one ſtr plant growing in a hole for blanching.

Make ridges for cucumbers and melons, for a crop, and prune off the ſuperfluous branches from melon-plants upon the forward ridge: But do carefully, without lifting up the runners from ground; for the leaſt diſturbance of that kind is to bruiſe the tender branches, which often ends i loſs of the whole plant.

Water well your ſtrawberries, while they are in ſom, two or three times a week, if the weathe dry; this muſt be done in the morning.

## Garden diſhes and drinks in ſeaſon.

ONions, leeks, coleworts, beets, parſly, and herbs: ſpinage, ſorrel, ſcorzonera, green ragus, lettice, raddiſhes, and other ſallads: Cr pickled artichokes, beetrave, barberries, cucumb

Houſed apples and pears, conſerved che plumbs, peaches, apricocks, gooſeberries, curr alſo the wines of apples, pears, cherries, liqu honey, *&c.*

## MAY.

PULL up ſuckers, and hoe about the trees off unneceſſary buds: ſheer or clip he prune tender greens, not the roſinous: forth the houſed ones, refreſhing and trimming

t all ſorts of medicinal herbs: ſow all the ſweet
s which are tender.

ather ſnails, worms, *&c.* catch moles.

ow lettice, creſſes, purſlain, turnips, radiſh, peaſe,

Continue weeding and watering.

ear the end, watch the bees ready to ſwarm.

ltho' in this month the ſeaſon is ſo far advanced,
o bring many plants to their higheſt perfection, and
ure ſeems to be dreſſed in her wedding garment, the
den is yet ſubject to many hazards from froſty
hts, and cold blaſts, which oftentimes happen in
firſt fifteen days: we have ſeveral times ſnow in
month; and though ſnows are uncommon at this
ſon, yet the ſhowers which frequently fall towards
beginning, are often mixed with hail, which I ac-
nt the moſt pernicious offſpring of the weather,
h reſpect to vegetables, as their leaves and young
t are then tender, and very ſubject to be bruiſed by
ry little accident of that kind. It has been a rule
ong gardeners, about the middle of this month, to
oſe, or bring abroad, their exotic plants, and ſuch
der ſhrubs, as the uncertainty of the weather, in
preceeding months, confined within doors; and I
e obſerved, we ſeldom have any weather ſo unfa-
rable to plants after the fifteenth, as to do them
prejudice.

f ill weather, or other accidents, has prevented a
dener from performing what is recommended for
work of the laſt month, let him delay no longer
n the firſt week of this; for now the ſeaſon is ſo
advanced, that a day loſt is equal to a week in the
e preceeding months.

ow look to your melon-ridges, as well thoſe made
ebruary, as thoſe which were planted in the laſt
nth, weeding them, and carefully pruning off the
er-branches, which are known by their flatneſs and

extraordinary breadth: It is alſo adviſeable to pi off the tops of ſuch runners as have fruit upon th leaving three or four joints always beyond the fr and particularly taking care that every fruit be ſ ciently ſheltered with leaves; for to expoſe them to ſun while they are ſmall, ſpoils their growth. I ſuppoſed that a melon is about forty days between time of its ſetting and ripening; and as it is preſcrib that fruit is to be ſhaded by the leaves, during the ti of its growth, ſo when that is perfected, we can expoſe it too much to the ſun for ripening, if we wo have it well taſted.

If the ſeaſon be dry, rather float the alleys betw the melon-ridges, than pour water upon the plants, near the ſtems; for the uſe of watering is to feed extreme fibres of the roots, which are the only pa of a plant by which it receives its nouriſhment; theſe fibres in melon and cucumber plants always as far as the branches. The inconveniencies wh attend the wetting the leaves or ſtems of theſe pla are either, that they rot or mould by the wet ly long upon them, or elſe they are ſcalded, if the ſhines hot.

The water for this uſe ſhould be as ſimple as p ſible; for all waters prepared with hot dungs, br inſects among plants, which often deſtroy the pond-water, which lies expoſed to the ſun, I take be the beſt, and even that ought to be given but ſmall quantities to a melon; for much wet ſpoils flavour, but cucumbers are great lovers of it.

In the beginning of this month, ſow cucumbers the natural ground, about ten or twelve ſeeds in ea hole, for fear of diſappointments; but leave o four or five when they are come up: let the earth freſh and well wrought with a ſpade, rather lig for in ſtiff ſoil the fruit is apt to ſuffer by wor s ſowing will afford us plenty of fruit in Auguſt, as ll for pickling as to eat with ſallads: a plantation of s kind producing near twice as much fruit as one the ſame quantity of ground forced with dungs.

Gather carefully the neſts of caterpillars, and other ects which annoy your trees, and prune off all crumd leaves and twigs, for they harbour the worſt of min, although they are ſcarce viſible without the p of microſcopes: this work is the more neceſſary, auſe, as Mr. Richard Bradley informs us, every ect increaſes yearly about four hundred, and ſome them many more; for example, thoſe caterpillars ich feed upon the cabbage, and change into the mmon white butterflies, breed twice every year, h of them laying near four hundred eggs at one e; ſo that from the ſecond brood of one ſingle erpillar, we may reaſonably expect one hundred d ſixty thouſand.

### Garden diſhes and drinks in ſeaſon.

OLEWORTS, and other herbs, being eaten with contentment, are better than a fatted ox without. Sage with butter, leeks, parſly, thyme, marjoram, el, ſpinage, *&c.* Scorzonera, aſparagus, lettice, lain, and other ſallads and pot-herbs.

ickled artichokes, barberries, beetrave, cucum-; houſed apples and pears for many uſes; early ries, and ſtrawberries near the end.

yder, metheglin, liquoriſh-ale, *&c.*

## JUNE.

LEANSE about the roots of trees, ſuckers, and weeds; water their covered bulks, eſpecially the -planted.

Fell the ſmall ill-trained foreſt-trees in the nurſe
within half a foot of the ground; but this work ſho
rather be performed in April, as will appear from
long experience of an author, who has publiſh
his practice in raiſing foreſt-trees: Unbind gra
Prune all wall and ſtandard trees; towards the
you may inoculate, and increaſe by circumpoſition

Gather elm-ſeed, and ſow it immediately.

Tranſplant collyflowers, coleworts, beets, lee
purſlain, *&c.* in moiſt weather; at leaſt water firſt
ground, if dry.

Sow peaſe, radiſh, turnip, lettice, chervil, creſ
*&c.* Deſtroy ſnails, worms, *&c.*

Begin to lay carnations or July-flowers; ſhade,
port and prune ſuch as will blow; water pots
thirſty plants; take particular care of your Auric
pots to ſhade them and keep them from much wet,
they are now at their weakeſt ſeaſon, immediately a
the bloom of their flowers is over: weeding and m
ing is in ſeaſon, and ſo is diſtillation.

Bees now ſwarm, look diligently to them.

The method I have taken in the preceeding mon
in giving a ſhort account of the weather, wh
may reaſonably be expected every month, was chi
deſigned to ſtir up the gardeners to a neceſſary
of ſuch of their plantations, as are the moſt ſub
to be injured by uncertain ſeaſons: but as the
going months required, that we ſhould uſe our gr
eſt ſkill and diligence to guard againſt froſts; ſo
we ought, with the greateſt application, to uſe
per methods for defending our plantations from
too violent ſcorchings of the ſun, and have a wat
eye upon ſuch plants, eſpecially, as have been la
tranſplanted, and refreſh them with moderate w
ings about their extreme fibres: for to give them

r too near the ſtem, does them little good: this ork ought now to be done in the evenings.

Continue to mow graſs-walks early in the morning, nd after rain; alſo to deſtroy weeds, as in the former onths.

It is now a proper time to clip edgings of box, *&c.* pecially after rain; but if the weather be dry, ga- er herbs for drying, to lay up for winter-uſe, ſuch ſage of vertue, mint, carduus, thyme, laven- r, *&c.*

Cut no aſparagus after the firſt week in this month, r it will impoveriſh the roots.

The ſeaſon is now very proper for the budding or oculating of peaches, and other ſtone-fruits.

### Garden diſhes and drinks in ſeaſon.

OLLY-FLOWERS, beets, parſly, ſorrel, and other pot-herbs; purſlain, lettice, and other ſallads; ddiſh, ſcorzonera, aſparagus; green peaſe and ar- hokes; green gooſberries, ripe cherries, raſps; cur- ns, ſtrawberries. Houſed apples and pears. Cyder, theglin, *&c.*

## JULY.

ALLOW ground as ſoon as the crop comes off: prune and purge all ſtandard-trees: pinch off h your fingers the out-branches of your wall-trees: l up ſuckers and weeds: hoe and water when need- : inoculate fruit-trees, ſhrubs, evergreens, flower- es; increaſe the ſame by laying: clip your hedges r rain: ſuffer ſuch herbs and flowers to run to ſeed you would ſave, cutting the reſt a hand-breadth from ground.

Sow turnip, radiſh, lettice, onion, colly-flow cabbage and coleworts in the full moon : near the ea ſow beets, ſpinage, *&c.* You may plant ſtrawberri violets, camomile : lay july-flowers, plant their ſee lings : ſlip and ſet hypaticas, bears-ears, cowſlips, h libores, *&c.* Sow at the full moon all the ſorts of ſtoc july-flowers and wall-flowers, and, after they are co up and have attained five or ſix leaves, tranſplant th into pots or boxes, which may be put under cover d ring the winter, to keep them only alive, and in t ſpring plant them out for good. Take up bulbous a tuberous ones that are dry in their ſtalks, if you i tend to change their places, and keep till Septembe but ſome ſhould be ſet immediately.

Supply voids with potted annuals : lay graſs a gravel : make cherry and raſp-berry-wine. *&c.*

Prevent the bees latter ſwarms by putting an eik the hives ; kill drons, waſps, *&c.*

We are now arrived at that happy ſeaſon, whi affords us almoſt every variety the garden can p duce : if the gardener has been diligent in the p ceeding months, he now meets the reward due to skill and labour : we have little rain at this time, a the weather very hot ; therefore your greateſt c muſt be to water carefully all new planted trees a herbs, ſo as to nouriſh their outward fibres, as is fore directed : the hours of general watering in t month, are from five in the morning till eight ; a from five in the afternoon till eight or nine in the vening ; but in particular places, which have the nefit of ſome wall or hedge to ſhade the ſun fr them, we may take other times of the day, obſervi the motion of the ſun, that his beams do not rea them till at leaſt two hours after watering ; for the treme heat of the ſun at this time of the year, wo ſcald a new-watered plant, if we did not allow a ſu

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t time for the moiſture to ſink into the ground be- e the ſun come upon it.

ruſt not too much to the ſudden ſhowers which now fall, for they are of little help to the roots lants; neither neglect to water thoſe plants which d abroad in pots or boxes, for they have yet leſs efit from the rains in this ſeaſon, than the plants in open ground.

elay not to gather ſuch ſeeds as are fully grown coloured in their husks, eſpecially auriculas, hy- ths, polyanthus, or ranunculus ſeeds; pulling up whole plants, and ſetting them upright in a houſe, the ſeed-pots are dry; for were we to wait till the s open before we gather them, great part of the would be loſt. This way of gathering of ſeed is monly practiſed; the moiſture in the plants, and tle ſun, will perfect the ſeeds, and they are ſubject o hazard from birds or wet weather.

ow carrots, turnips and onions to ſtand the win- earth up ſellery in drills, and plant out a new el to ſucceed the former: plant out what colly- ers you have yet remaining, to bloſſom in the au- .

uard againſt waſps and other inſects, which now ur your fruit, by placing phials of honey and ale your fruit-trees; and by ſeveral other ways you ſoon catch a large quantity of them: once eve- eek renew the bottles: and above all, take care uiſe the inſects you take out of them; for tho' are ſeemingly dead, I have known a warm day o bring them to themſelves; therefore take care you throw them away.

ere is no time more proper to war againſt ants, ther ſuch deſtructive vermin, than this month; re now all abroad, and may be taken.

Be careful to pick off all crumpling leaves where you ſee them, and the very twigs themſelves if th are curled; for they are the beds of deſtructive cr tures.

I the more particularly recommend the deſtruct of theſe devouring vermin, becauſe of their wond ful increaſe, eſpecially the ſmaller kinds of them, ſu as infect the collyflower, whoſe eggs are five hund times, as Mr. Richard Bradley informs, leſs than leaſt grain of ſand, and many thouſands of them number laid from that ſingle inſect; ſo that from a cond generation of them, they are ſo numerous, tha every egg, which one might find upon a blighted co flower, was a globe of an inch diameter, they wo fill more ſpace than the whole terreſtrial globe: wondeful ſmallneſs of the eggs of thoſe creature confeſs, may ſeem very ſtrange to thoſe who are un quainted with the uſe of microſcopes; but this i more curious, than what the late famous Dr. H has taught us in his works, where he mentions ſeeds of moſs, which were ſo ſmall, that ninety t ſand of them being laid together in a ſtraight line, not exceed the length of a barley-corn; and that thouſand three hundred and eighty-two million, hundred thouſand of them would weigh only a g

About the 28th, ſow ſome collyflowers to the winter: for the right ſeaſon for this work is c ly to be regarded, if we propoſe to have good flo early in the ſpring; for ſowing them only a few ſooner or later, makes them either run before time, or come much later, or weaker than they o to do: if the winter be mild, and the plants are cloſe together, many will run up to ſeed; and if froſts, and a rough ſeaſon begins in November, of this ſowing will make good forward plants: ever, I adviſe to ſow again the firſt week of the

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nth ; ſo that from theſe two ſeminaries, it will be rally impoſſible to miſs of a crop to our mind.

Take up ſhalots, garlick, and gather rocambole en the ſtalks turn yellow.

### Garden diſhes and drinks in ſeaſon.

EETS, and many pot-herbs and ſweet herbs, purſlain, lettice, endive, &c.

abbage, colliflower, ſcorzonera, beetrave, car- , radiſh, turnip, peaſe, beans and kidneys: arti- kes, ſtrawberries, raſps, curants, gooſberries, cher- , plumbs, ſummer pears and apples. Cyder, me- glin, and other wines.

## AUGUST.

ALLOW borders, beds, nurſeries, and the bulks of trees; yet inoculate: ply and purge trees: up ſuckers and weeds: clip hedges; gather the k-cherry-ſtones and make them up for fruit-trees n walls, where the young trees are to be planted October or November. Gather mezerion-berries: her the ſeeds of moſt herbs and flowers: cut your ſic herbs. In the beginning ſow cabbage, tho' I feſs it is rather a ſeaſon too late, ſpinage, black ra- , chervil, lettice, corn-ſallad, endive, ſcorzonera, y, marygold, angelica, and ſcurvy-graſs, &c. Take ripe onions, garlick and ſhalot: unbind buds ino- ted: cut and ſtring ſtrawberries: lay julyflowers: columbines, holly-oaks, larks-heels, and ſuch as endure winter.

ake up your bulks, and plant as in the laſt: ſift ground for tulips and gladiolus: plunge potted uals into vacancies: keep down weeds by hoeing,

ing, *&c.* Lay graſs and gravel; beat, roll and m well; make gooſberry and curran wines, *&c.*

Towards the end, take bees, and the lighteſt fi thoſe who are near heaths may differ a little: deſt waſps; ſtraiten the paſſage, by putting on the hecks ſecure from robbers.

In the firſt part of this month, the weather is co monly hot and dry, ſo that watering is ſtill neceſſa but at the latter end we are not without danger of f ſty nights; and I have obſerved, that then alſo our rains begin.

We may water in the evening till the fifteenth; after that, if there is occaſion, the morning is to preferred for that work, for fear of froſt.

The firſt week, ſow a ſecond crop of collyflow to ſtand the winter, leſt the firſt ſhould run to ſe which they will be apt to do, if we have an open ſon till Chriſtmas, or the ground be light and lie bottom.

Now break off the ſtems of ſuch artichokes, to ground, as have done blowing.

Sow creſſes to ſtand the winter; they will heigh the taſte of theſe ſallads which are gathered upon beds in December and January, *&c.*

Give more earth to your blanching ſellery, continue to raiſe the earth about it every fortni In dry weather only mind to gather what ſeed have ripe.

Yet continue to deſtroy weeds, and ſuch vermi annoy the trees.

Till the fourth of this month, we continue to turnips in the open fields; for theſe roots not yield a profitable crop, but very much enrich all ſoils.

Towards the end, ſlip and ſet aromatic he as ſavory, thyme, hyſop, *&c.* and cut down t

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ich are run to ſeed, within three or four inches of
ground.

## Garden diſhes and drinks in ſeaſon.

MANY pot-herbs and ſallads, cabbage, collyflower,
beetcard, turnip, radiſh, carrot, beetrave, ſcor-
era, peaſe, beans and kidneys, artichokes, cucum-
s, apples, pears and plumbs of ſeveral kinds, apri-
ks, geens, gooſberries, currans, raſps, ſtrawber-
, &c.

yder, metheglin, cherry-wine, curran-wine, gooſ-
ry-wine, raſp-berry-wine, *&c.*

## SEPTEMBER.

ALLOW, trench and level ground; prepare
pits and borders for trees; gather in the laſt week
his month plane-ſeed; gather ripe fruits; plant
h cabbage; alſo plant bulbs; refreſh, trim and
ſe your tender greens; refreſh and trim pots and
s with julyflowers, and other fine flowers and
nts, carrying them to ſhades for ſhelter; and co-
them, giving them air at all proper occaſions, ſuch
n ſoft weather in winter.

owards the end gather ſaffron.

ake cyder, perry, and other wines, &c.

traiten the entrance to bee-hives; deſtroy waſps:
lſo you may now remove bees.

this month the gardener has great variety of bu-
s, and muſt employ his head as well as his hands
ards furniſhing his kitchen-garden with every
g neceſſary for winter-uſe. The ſhowers, which
ſeldom wanting at this ſeaſon, prepare ground for
reception of many plants and ſeeds, and the great
s alſo declining, give us now opportunity of re-

planting many things which would have been enda gered by removing in the preceeding month.

At the beginning, hoe turnips the firſt time. the weather be dry, gather ſuch fruits as are now r upon the trees, and ſuch others as are full grown, in good condition to be laid up in the houſe, for uſe of the following months: ſuch pears or apples are fit to gather, will eaſily leave the tree; theref uſe no violence to pull them off; for ſuch as do willingly part from the tree, will ſhrivel and have inſipid taſte.

Gather ſuch ſmall ſeeds as are now ripe, accord to the former directions: gather leek-ſeeds, if ſeeds are black, cutting the heads from the ſtems; ſpread them upon a ſheet every day in the ſun, they are fit to be rooted out.

Gather the pods of garden and kidney-beans, expoſe them to the ſun for drying, to be laid up the ſpring, or the time you would uſe them; and them not be taken out of the ſeed-pods till ground be ready for them, for the pods preſerve ſeeds.

The cucumbers which are now full ripe, muſ cut open, and the ſeeds and pulp taken out of to remain together two or three days before they waſhed clean: the ſeeds may then be kept in twenty-four hours, and laid to dry in the ſun ten be ſure all ſeeds are thoroughly dry before they laid up, or they will rot.

We may yet replant endive, and all ſorts brous-rooted herbs; continue to earth up ſellery make plantations of cabbages and coleworts. now a good time to tranſplant ſtrawberries.

Tranſplant young collyflower plants, in where they are to flower, under ſome warm w place for ſhelter; thoſe which are now planted

od, will bloſſom above fifteen days ſooner than
oſe which are planted in the ſpring, and will pro-
ce much larger flowers if they can be preſerved
ough the winter.

### Garden diſhes and drinks in ſeaſon.

VARIETIES of pot-herbs and ſallads, cabbage, colly-
flower, peaſe, beans and kidneys, artichokes,
tcard, beetrave, ſcorzonera, carrots, turnips, ra-
h, cucumbers, apples and pears of many kinds; a-
cocks, peaches, nectarines, quinces, grapes, bar-
ries, filberds.

Cyder, liquoriſh-ale, metheglin, and wine of cher-
, raſps, gooſberries, currans, &c.

## OCTOBER.

GATHER winter fruits; trench and fallow
ground, mixing with proper ſoil to lie over the
ter; prepare dungs and manures, mixing and laying
n in heaps, bottomed and covered with earth; plant
thorn-hedges, and all trees that loſe their leaves;
lay their branches; prune roſes; gather ſeeds of
l, hawthorn, plane, aſh, beech, oak, apple,
&c. Cut ſtrawberries, artichokes, aſparagus,
ring their beds with dung and aſhes; earth up
er ſallads, herbs and flowers a little; plant cab-
, &c. plant tulips, hyacinths, oriental-narciſ-
daffodills, colchicums, crocus, colchicum-ver-
winter-aconites, ſnow-drops, frittillaries, denſ-
, iris Engliſh and Spaniſh, gladiolus', &c. and
bulbs; ſow the ſeed of bears-ears, cowſlips, tu-
iris and hyacinths, &c. beat and roll gravel
graſs; finiſh your laſt weeding and mowing;
are leopar tree-roots, and remove what harms
them;

them ; alſo delve and dung ſuch as require it ; dra exceſſive moiſture wherever it be ; pickle and conſer fruits. Make perry and cyder.

You may now ſafely remove bees.

We ought now to make uſe of every opportunity compleat our plantation of herbs for winter uſ the greateſt part of this month we may expect to rable weather ; but after that, our chief buſineſs w be to ſecure from the ſeverities of the ſeaſon, all pla which are in danger of being injured by the froſts a high winds.

Take up thoſe collyflower plants which begin flower; tye their leaves together, and bury their ro and ſtalks in ſand, in a cellar or ſome cold place : flowers will increaſe in bigneſs, and remain good ſome months.

Alſo cut artichokes with long ſtalks, and preſe them in the houſe, ſetting their ſtalks in ſand.

'Tis now the ſeaſon to lay up roots for winter-ſto ſuch as carrots and parſnips; and ſome gardeners ſo think it beſt to take the roots of turnips out the ground, and lay them in ſand : but, I rather cho to leave the turnips in the ground, until we are re to uſe them ; and for the other two kinds, I preſcr the following method: make choice of a dry par your garden, and there dig a trench about eight or inches deep, into which, without mixture of eart ſand, lay your roots cloſe together, firſt cutting their green tops and growing buds, and then c them about ſix inches thick with wheat-ſtraw r ways. We may this way preſerve them fit for uſe the following June.

'Tis now the beſt time of the year for tranſplan of fruit-trees, altho' their fruit be upon them : bu would rather chuſe that their fruit were off, or t off them before tranſplanting them.

Tranſplant foreſt-trees of all ſorts from the be-
ning to the end of this month ; the elm eſpecially
ut the firſt week, altho' its leaves are then very
en.

bout the middle of this month ſow the cyder preſ-
s in beds of freſh earth, to raiſe ſtocks for graft-
, or even making of orchards without graffing.
m a nurſery of this kind, we raiſe as many diffe-
t ſorts of apples as we raiſe plants, altho' the ſeed
e all from the ſame tree ; ſo much is nature pleaſed
h variety.

nd it may be, was the earth more conſtant and u-
rm in its productions, its vegetative power would
oo ſoon exhauſted ; for I conceive, were all apples
ctly the ſame, they would all draw that very ſame
riſhment from the earth, and the like with every
e of vegetables ; but this variety ſeems to deter-
e, what I have often thought, that there are as ma-
diſtinct qualities in the earth, as there are diffe-
kinds of plants growing upon it, and that each
t can only take out of the earth that ſpirit which
parts are naturally prepared to receive, and leave
others undiſturbed. If the generation of plants is
wed, as the forementioned Mr. Richard Bradly ex-
ns in the firſt part of his new improvements, the
variety in plants ſeems to proceed from the cou-
g of one plant with another ; and that the *farina*
*ndans* of one ſort being conveyed by the air, and
ed upon the female parts in the bloſſom of another
, changes the properties in the ſeed which it im-
nates, ſo as to make it produce a tree differing
n the mother-plant.

ow lay up ſome acorns and the maſt of other tim-
rees in dry rooms.

owards the end, earth up and dreſs artichokes ;
a common cuſtom with gardeners to dreſs arti-

chokes with hot dung, or dung which comes from ſtables; but this is a very wrong practice; for the dung hurries on the plants to vegetate at a bad ſea of the year, when the froſt will cut off the you fruit, and this makes them late in fruiting in ſpring: but the beſt method is to earth them up w their own earth, or a little very old hot-bed dung, above the earth which ſurrounds them; and co your aſparagus beds with long dung: but ſee it old ſtanch dung, to preſerve them from the ſeverity the winter.

### Garden diſhes and drinks in ſeaſon.

COLEWORTS, leeks, cabbage, collyflowers, ons, ſhalot, beans, blanched endive and ſe ry, pickled aſparagus, purſlain, *&c.* Scorzon beetrave, carrots, turnips, parſnips, potatoes, s rets, artichokes, cucumbers, apples, pears, plu almonds, *&c.*

Cyder, perry, and wine of cherries, currans, g berries, raſp-berries; ale of liquoriſh, metheglin,

## Of POT-HERBS, and ſuch as are co monly uſed for DISTILLING.

THAT there may not be any thing omitted is proper to be done in the kitchen-garden, thought neceſſary to treat of ſuch plants and herb are commonly uſed for diſtilling, and are ſometi dried for the uſe of the kitchen; and firſt of ſuc are aromatics.

Roſemary and lavender are both durable p and evergreens; they love a light ſandy ſoil, an

th raiſed from ſlips planted in April; quickly taking
ot, if they are ſhoots of the laſt year, but will not
ow if they are older: They are apt to ſuffer by the
oſt, eſpecially if they have too much wet, and therefore
ould be planted chiefly in the drieſt parts of the
rden, where they may be the moſt expoſed to the
n. Lavender makes a fine edging in large walks, if
be often clipped; but for the ſake of its flowers,
ich are often uſed, we muſt have a plantation of it
art; for were the edging plants ſuffered to flower,
eir beauty would be ſpoiled.

Thyme and hyſſop are either raiſed from ſeeds
wn in March or April, or propagated from ſlips
nted in theſe months: we have many ſorts of
yme of various ſcents and uſes; the pot-thyme,
non-thyme, and a ſort with variegated leaves, are
oſt commonly cultivated, and make very good edg-
s, that will laſt ſeven or eight years: and beſides
em, the maſtic-thyme, and the marum Syriacum, or
-thyme, are cultivated in many gardens, for the
e of their refreſhing odour; but the latter, if it is
ſmall quantities, muſt be carefully defended from
cats, who love to eat it, and are intoxicated with
but I obſerve, where it is in abundance, the cats
ver diſturb it. Theſe two laſt kinds ſhould be plant-
in the warmeſt parts of the garden; the others will
ow any where.

Sage has many varieties; but we propagate only
ee ſorts of it, *viz.* the red-ſage, the tea-ſage, or
e of virtue, and the wormwood-ſage; theſe kinds
raiſed from ſlips taken from the roots about the
inning of April, and planted a foot apart in
t earth. The ſage of virtue ſhould be cut for
ing, when it is full of young ſhoots, for thoſe on-
re fit to make tea of; they ſhould be gathered
a dry day about noon, and laid to dry in the ſhade

to be preſerved for uſe. I have been often told, th the wormwood-ſage is preferable to the former, fording a pleaſanter liquor, and more grateful to t ſtomach.

We ſeldom meet with more than two ſorts of r in our gardens, and their difference only conſiſts the colours of their leaves; the one being variegat with cream colour, and the other of a plain gree this plant delights in ſhady places, and is eaſily m tiplied by ſlips ſet in April in a light ſoil. In times peſtilence this plant has been much in requeſt, believi it prevents infection.

Mint, or minth, and baum, ſhould neither of the be wanting in a kitchen-garden; they are propag ed by parting their roots any time in the ſpring, a will grow any where. Mint indeed is more genera cultivated than the other, as it is of itſelf a pleaſa ſallad, and good in ſoups and ſome ſauces, beſides i extraordinary uſe in diſtilling: When it is about a fo high, it ſhould be cut to dry in bunches for winte uſe, obſerving this as a general rule, to cut eve herb deſigned for drying in a dry day, and then to d it in the ſhade.

Some gardeners think it worth their while to pla ſome large roots of mint in the corners of their ho beds about November, that they may have youn ſhoots of it to mix among their winter-ſallads in F bruary.

Tanſy is increaſed by parting the roots in the ſprin and is a plant ſo valuable, that it muſt not be wan ing: ſome of it ſhould always be kept dry in winte eſpecially for the uſe of thoſe who are afflicted wi the gout in their ſtomach: it is of that ſovereign ef cacy in that caſe, as I have found by experienc that I think I ſhould be guilty of ill-nature, if I w to paſs by this opportunity of making known the m d of uſing it. Boil half a handful of this herb in f a mutchkin of ſtrong white-wine, and drink this oction as hot as poſſible : I have always found it to ove the pain in leſs than a quarter of an hour.

Wormwood is either raiſed from ſeeds or ſlips plant- in March ; it will grow in any ſoil, and be apt to er-run the ground, if it be eaten by hogs when the ds are ripe, which paſſing through their bodies ger- nate and come up very quickly.

Penny-royal and camomile are uſeful herbs, and y well deſerve a place in the garden ; they delight moiſt ſhady places, and proſper beſt in a ſtiff ſoil; y are both propagated from ſlips planted in March April.

We have two kinds of marjoram commonly pro- gated in gardens ; one ſort called the Winter Sweet- rjoram, which will reſiſt our froſts, and remain od two or three years without renewing ; but it will proper in ſevere winters to have ſome of theſe nts in pots, which you can preſerve under hot- d frames, provided they are kept warm ; the other ſown annually upon the hot-bed in March, not be- g able to defend itſelf from the violence of our inters : the firſt kind is increaſed by planting the ſlips out March or April, in moiſt places, but has not at agreeable ſcent which we find in the other ; there- re ſome of the laſt ſort ſhould be tried every year hen it is grown pretty large.

Carduus is raiſed from ſeeds ſown either the middle f Auguſt, or in March ; but I commend the autumn ants before thoſe raiſed in the ſpring, as they are uch larger, and more vigorous than the others, and eſides have a much better ſeaſon to dry in.

Angelica is raiſed from ſeeds ſown in March in a ry rich ground ; it is a plant that laſts good for ſe- ral years without renewing, and is of great uſe;

the beſt method to propagate it is, from its off- planted in a rich ſhady place of your gardens.

Dragons ought alſo to be found in your garden, well for the beauty of the flowers, as the uſe m of the whole plant in many caſes; it is multiplied tranſplanting the ſuckers taken from about the r in March: This plant loves a freſh natural ſoil ſhade.

Fennel and dill are both propagated alike fr ſeeds ſown in the ſpring; they are uſeful herbs, ſhould not be wanting in a garden; the firſt hav its tender ſtalks blanched like ſellery, makes a v good ſallad.

Parſly and clary are alſo very uſeful furniture fo kitchen-garden, both cultivated with great facility, raiſed from ſeeds ſown in March, and renewed ev year.

Theſe being all the plants that are required to gr in a kitchen-garden, it is adviſed that they be plan in ſome place near the houſe, for the conveniency gathering them with little trouble when they wanted.

## The FLORIST's *Vade-mecum*

FOR THE

Propagating, raiſing, planting, increaſing, and preſ ing the rareſt FLOWERS and PLANTS.

THE ſnow-flower, or ſnow-drop, is one of firſt flowers in the year, but very comm there are double and ſingle ones. It flow in January; the ſingle riſeth out of ſix green leav the ſtalk riſeth about ſeven or eight inches high;

flo

er has three white leaves on the outſide, with e ſhorter tipt with green in the inſide. It loves d ground, and is moſt increaſed by the root. ere is another ſort of it called the donfoly-prima- in the Dutch catalogues; it has a fine ſmell, and y far preferable to the common ſingle ſnow-drop, requires the ſame culture.

he winter wolfs-bane, being but an indifferent d of flower, flowers in February; the ſtalk riſes ut 5 inches high, and cometh up through the middle the leaves, and the leaf is indented with a ſingle low flower. It loveth pretty ſtrong ground. It is reaſed moſt by the off-ſets or roots, which muſt be ed before the leaves are dead, otherwiſe it is diffi- t to find the root of this flower, they being of an thy colour.

rocus, or ſaffron, is of many kinds and colours; y riſe with narrow green leaves, with a ſmall white up the middle, they flower in February: you may pagate them by the ſeed, but we have them moſt beſt by the root or off-ſets. They increaſe very l, and love a light ground, but not too dry.

rimroſes and cowſlips being of many colours, of ich there are a great many common ones in this ntry, they flower in March, and are loved for their iety of colours: they are propagated by ſeeds or ſlips, grow beſt in ſhades in moiſt ground. Their ſeed own in September, and comes up in the ſpring. re are now ſuch variety of theſe flowers in England, their value exceeds that of the fineſt auriculas, and rs. Anderſon and Whytt, Seedſmen, oppoſite to the ſs, Edinburgh, have by far the fineſt ſorts, and beſt ection of thoſe flowers, that are now in Scotland, ing purchaſed the whole collection of the famous James Juſtice, late Clerk of Seſſion.

oble liverwort, being of two ſorts, the ſingle

and double, of each lighter and darker blue colo
There never was raiſed a double white, but the do
peach colour and the double blues are common
flowers in March : the flower cometh before the lea
It loveth a light ſoil, and may be increaſed by ſ
or ſeed ſown in Auguſt or September.

Hyacinths are commonly bulbous-rooted, with m
flat fibres under them, from whence ſpring five o
leaves of a light green, though at firſt reddiſh. T
are many kinds of them, and of different colours;
flower in March and April, and are increaſed f
off-ſets of the roots planted in September: they
a good rich ſoil not too moiſt or too dry. For
culture of hyacinths, ſee Juſtice's Scots Gardene
he had the beſt collection of thoſe flowers in Bri
and has had the greateſt ſucceſs with them, both
his ſeedlings and his off-ſets.

Narciſſus and daffodils; there are many kinds
colours of them; they grow up with tall green le
and flower in March and April: they adorn a ga
very much, and are admired for their beauty and f
They are propagated from off-ſets of the roots,
love to grow in good ground, and ſhould not be
but once in three years.

Bears-ear is a plant pretty well known in this c
try; they are indeed very delightful, for their ſu
ing varieties; they bloſſom in March or April:
are propagated by ſlips, but the different kind
colours come from the ſeed, which is ſown as
as it is gathered; it endures the winter, and co
up in March; it muſt be kept from the ſun, fo
leaſt blink of the ſun killeth it, particularly
young ſeedling plants, which fitly are expoſed t
one day's ſun,. will undoubtedly periſh without
poſſibility of recovery. This plant delights in a ſ
rich ground, and ſomewhat ſhady, but not unde

p of trees. It may be planted in autumn or ing.

Dogs-tooth-violet; there are of them white, and red, l fleſh-coloured: it riſes with two ſpotted leaves, a lk about ſix inches high bearing one flower upon it, nging down the head with ſix narrow long leaves, e to a cyclamen or ſow-bread, turning up again to ſtalks, and flowers in March and April. It loves ight ſoil, not dunged, and is increaſed by off-ſets ſet Auguſt.

The crown-imperial, that moſt ſtately plant, hath a ge yellow root, which has an ill ſmell, and riſeth h a tall ſtalk, adorned with ſmall ſhining green ves, with twelve or ſixteen flowers, according to age of the plant, hanging down about the ſtalk. flowereth in April, and is increaſed by off-ſets ſet Auguſt upon good light ground.

The double marſh-marigold is very common in country; it groweth in meadows or ditches, and ſpers well in gardens. It flowers in April and y.

he tulip is reckoned one of the fineſt flowers in prime, for its variety of colours, that is in the ld, both double and ſingle; if it had an agreeable t: it is propagated by ſeed ſown in September, ch produces many different kinds of flowers, and s not flower till four years after ſowing; and to inue the variegations, take them up every year wo, as ſoon as they have done blowing, and ſet n with their off-ſets in September or October; if you would have a good product of roots, let youngeſt roots ſtand two years. They flower in l and May, and love a good warm ſoil.

itillaries, whereof there are ſome varieties of rs, have a ſmall round white root, made of pieces as if joined together, whence ſprings a ſtalk a foot high, with ſome green leaves ; at the thereof cometh the flower out amongſt five or leaves, hanging the head downwards. They flo in April and May, and are increaſed by ſeeds ſo after the manner of tulips in March, and the roots ken up before July muſt be ſet in Auguſt. They l light ground.

The late flowering bulbous-violet hath a pretty l white root ; its ſtalk riſeth a foot and an half hi there cometh from the root five or ſix long gr leaves, and it has ſeven or eight flowers on a ſtalk. flowereth in May. It may be increaſed by ſeeds off-ſets.

The ſtock-julyflower is a plant which laſts two three years, and needs but little trouble about the creaſe of it ; but if you have ſome fine kinds, muſt lay them for their preſervation ; there is a g many ſingle and double kinds got from the ſeed of fineſt colours of the ſingle ones, with five or ſix lea ſown in June, which will be fit for tranſplanting the autumn, but do rarely blow till the ſecond y The double kinds may be increaſed by ſlips or tings planted in May, June or July. Theſe pl have many branches on a ſtalk, and bear many flo on a branch ; their flowers begin in May, and co nue till froſt checks them ; the ſcent of their flo is very pleaſant, and the ſeveral colours of their b ſoms, if they be well mixt, are very beautiful. T love a warm dry ground.

The wall-flowers are common ; but the double- low with variegated leaves are very rare ; they be raiſed from ſlips planted in ſhady places, in A May or June ; but the laſt may be more eaſily pr gated by ſeeds ſown in May. They flower in M and love a hot dry ground.

Anemon

Anemonies; of this kind of plant there are many
ieties, as well with ſingle as with double flowers.
ir colours are chiefly reds, blues, and purples;
eir bloſſoms open themſelves in April or May. They
e very hardy, and may have flowers all the ſeaſon
cording to their planting: but to preſerve choice a-
mony-roots, take them up after their ſpring-bloſſom
over, when their ſtem is withered; keep them dry all
e winter, and plant them in February or March.
hey love a good rich ground ſomewhat light. The
eds of the ſingle kinds ripen about the latter end of
ay, and ſhould be gathered as they begin to crack
ſhow their down. From them may be raiſed in-
merable varieties, if they be ſown in February, and
htly covered with earth. Meſſieurs Anderſon and
hytt have the fineſt varieties of theſe flowers in
eir nurſery at Broughton that are to be ſeen in Bri-
n, and their ranunculus's are the beſt that are in this
untry; as are their iris's, and, in a particular man-
r, the different kinds of their iris Anglicæ-bulboſæ.

The crow-foot is eſteemed for its beauty, but not
its ſmell; there are many kinds of it, and it has va-
us kinds of colours; it flowers in April or May.
ey muſt have better ground than the anemonies,
ugh planted and ſifted the ſame way.

The flower-de-luce has a bulbous root, ſmaller and
ater; it riſeth up with long ſmall green leaves; the
n cometh up in the middle about two foot high; it
wers in May and June; there are a great many kinds
d colours of them; they are increaſed from off-ſets
en their ſtalks are decayed. They love a light
l.

Lillies; of theſe there are many kinds, double and
gle, and of ſeveral colours, being much eſteemed
their ſmell; they riſe very tall, and adorn a gar-
n very much; they flower in June or July, and are

propa-

propagated by parting their roots, about Auguſt
September. They love a light ground.

The aſphodil bears ſtar-like flowers; there are
veral kinds of them, and different colours: they fl
er in May or June, and are propagated by off-
from the root; they may be likeways had from ſe
but being of no great value or beauty, it is not pr
tiſed. They love a good ſtrong ground, not too

Spiderwort; there are ſeveral kinds and colours
it; the white being much eſteemed, riſeth up wit
tall ſtalk, about twelve or fourteen inches high, w
bell-flowers ſtanding out upon it: the white flowers
May, the blue in July and Auguſt; and are both
pagated by the roots. They love likewiſe a good

The corn-flag is fit for wilderneſſes, or any
borders, becauſe it rambles up, and diſturbs other fl
ers with its broad long ſtiff green leaves, full of r
the ſtalk riſing from among them about three
high, bearing many flowers one above another, ſta
ing all one way like the fox-glove; it flowers in J
There are ſome ſorts of thoſe plants which h
flowers upon all ſides of their ſtalks, ſuch as the w
and ſome others. It is propagated by off-ſets from
root. It grows in very indifferent ground.

Roſe-campion has a double and ſingle kind, an
very well known in this country; for there are m
of the ſingle grows wild: it riſeth very high,
bears a great many flowers on a ſtalk; it flower
May and June, and continues till September. It
will grow in indifferent ground.

Dame's-violet, or Queen's-juſyflower; there are
veral ſorts of them, three whereof are common,
double white, purple, and ſingle purple; there is
other which is rare, and is moſt eſteemed, the do
ſtript one, which flowers in May or June.
ſingle ſtript one is much reſpected for its bearing

hich when ſown produces varieties. They love a
ood warm ground.

Sweet-william; there are two ſorts with ſingle flow-
s, and a double kind cultivated in gardens; the ſingle
nes differ only in the colour of their flowers; the one
as bloſſoms variegated with red and white, and the
ther cluſters of flowers on the top, of a deep crimſon
olour: they flower in July and Auguſt; the double
nes are propagated from ſlips taken from the root a-
out March or April: and there is lately raiſed a
uble variegated ſort; but the ſingle ones may be raiſ-
from ſeeds ſown in March, from which come the
fferent colours. They delight in light ground.

Venus looking-glaſs is a pretty ſeedling; it adorn-
a garden, and is proper for edgings, or to be ſown
ſpots; its branches run very low; and have ſmall
ves nicked on the edges: it bloſſoms in July or Au-
ſt, bearing flowers of a purple colour. It may be
n in March on a warm ground.

The red-ſattin flower, called the French Honey-
kle, hath many ſtalks ſet with winged green leaves;
the joints come out ſmaller ſtalks, ſet with many
wers of a red colour. There is another which is
ite, but is not ſo common; it bloſſoms about a foot
h in June and July, and makes a very good ſhow.
is propagated by ſeeds ſown in March or April, on
t ground expoſed to the ſun; the ſeedling plants
l not bloſſom for two or three years. It is a hardy
nt, and will live ſeveral years.

ouble and ſingle poppies are common; their co-
rs are various, and their flowers very beautiful,
not laſting; they appear in May and June; after
e ſowing, pull up the worſt and let the beſt ſhake;
can never loſe the kind. They will grow almoſt
where.

Baſtard dittany is of two colours, red and whi and grows about two foot high, with divers browni ſtalks, the lower part ſet with many winged leav like thoſe of young aſh, ſeven, nine or eleven tog ther, curled about the edges; on the ſtalks grow m ny flowers one above another; each contains five lo leaves: it blows in June and July. It is propagat by off-ſets, and loves a good warm ground.

The white hellebore, being a curious plant, riſi very tall, is of two kinds, one with reddiſh black flo ers, and the other with greeniſh flowers; they are a mired for the beauty of their leaves; they bloſſom May and June; the roots and ſtature of both kin are much alike. They are propagated from off-ſe parted in March, and likewiſe may be propagated the ſeed; but it ripens ſo ill, that it is hardly wor pains. They love a good warm ground.

Red virgins bower is a climbing tree; there a two plants of this kind, the ſingle and double, of r and purple colours; they have many weak woo branches, covered with a thin outer bark, and gre underneath, winding about any thing it can take ho of; the leaves ſtand at the joints: they flower t latter end of May, and theſe begin to appear from t joints on long foot ſtalks, made of four leaves ſtandi like a croſs, and continue till froſt. It is increaſed layers.

The corn-flower has many kinds: but there i double red one which is reckoned the fineſt, and not eaſy to be raiſed. They are ſown in March, a require a good warm ground.

The Spaniſh ſcabious is of ſeveral colours, but h little ſmell, yet it bears pretty flowers almoſt all t ſummer long. The ſeed muſt be gathered from t beſt flowers, and ſown in March: in dry weather

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uſt be watered. It ſometimes lives through the win- r, if not too ſevere.

Violets are eſteemed for their fine ſmell; there are ngle and double ſorts of them; the common ones are e blue and white; the rare ones are the double blue, e double white, and that with variegated leaves: ey flower in March and September. They love lean ound, and ought to be planted with primroſes and wſlips under hedges.

The heart's-eaſe is a ſort of violet, yet ſomewhat gger, and bloweth all the ſummer, and alſo in open eather in the winter; it ſhaketh its ſeed in the ground, d ſo cometh up next ſeaſon. It may alſo be increaſ- d by ſhoots. It loveth a good ground.

Larks-heel, being an annual, is very pleaſant in a rden; they are ſown every year to get double ones, t letting them ſtand they will ſhake themſelves, and me up the next ſeaſon; it blows with ſeveral co- urs, upon ſtems of three foot high, from June till uguſt or September.

Columbines: There are alſo of theſe variety of autiful colours, ſtript and unſtript; as alſo ſome like rs, which look very well in gardens. To have va- ties of kinds and colours, take the ſeed of the fineſt d doubleſt kinds, and ſow it in March on light ound oppoſite to the ſun. You may alſo increaſe em by dividing the ſets, but they are beſt from the d.

The African and French mary-golds: They are ſown her in hot-beds, or warm ground, in March or April; ey adorn a garden when ſet in flower-pots; the ſmell not ſo very agreeable, but now there is to be ſold in e Seeds-mens ſhops, particularly in Meſſrs. Anderſon d Whytt's ſhop, oppoſite to the Croſs, Edinburgh, e ſweet-ſmelling French mary-gold, which, when ſet pots, ſcents a room very well; they require much of the ſun to make the flower blow large; they bl about two foot high in May, June, July, Auguſt a September.

Meadow-ſaffron: Of this there is different kinds a colours; the leaves come up in the ſpring, being o light green; about mid-ſummer they decay aga and about Auguſt and September the flower com up, when moſt other flowers are gone, and is ve pretty in a garden, when ſet in rows or ſquares; th love a good light ground. They muſt be tranſplant about mid-ſummer when the roots are entirely reſt.

Sow-bread: There are many ſorts of this plant, a of different colours; they blow both in ſpring and a tumn; the rarity of them in this country makes th the more valuable: the time of removing is in Ju or July, or before the time of their blowing. Th are only propagated by ſeed, which muſt be ſown ſoon as ripe, in boxes, and then at two years end tra plant them into the garden: Theſe plants are bea tiful, as well in the variegations of their leaves as t delightful colour of their flowers. They love a go warm ground.

The lilly of the valley is very common in t country, and is in many gardens, the flower havin very pleaſant ſmell, much like unto the orange-flo ers; the uſe of this excellent flower in ſeveral pre rations, and its ſpecific properties and virtues in ſo diſeaſes, makes it the more acceptable. It groweth light ſandy ground.

Gentianella is a plant which groweth very low, is a great ornament to a garden; it bloſſoms open April, and alſo frequently in November and Dece ber, if the weather be open. It bears blue flowers a deep dye, and loves light ground, where it will rth many ſlips, which may be parted from the root March or Auguſt.

Snap-dragon, or calves-ſnout: Of this there is ma- y different colours, which come from the ſeed ſown March, and next ſummer it begins in May to blow, d continues all ſummer.

The bee-flower, of which there is a great many lours; they muſt be taken up when the ſtem is dri- in autumn. They commonly grow in wet marſhy ound.

The peonies, though a common flower, yet yields e faireſt and moſt durable bloſſom in May of any: t the white, purple, and changeable peonies, are ceptable in the gardens of the beſt floriſts, they be- g rare; and the ſingle peonies in the phyſic-garden, r the ſpecifical virtues of their roots. October is the ſt time to remove them.

The flower Conſtantinople: There is two kinds of the red and white; they riſe with a tall ſtem two three foot high, with long green leaves on the lk, with a buſh of flowers on the top; they flower in ly and Auguſt, and delight in light ground.

The daiſy is one of the ſmalleſt plants that grows, flowers blowing about four or five inches from the ound. The ſorts commonly known and cultivated gardens are, the double red, the double white, the uble red and white, the coxcomb or rainbow daiſy, d the hen and chicken daiſy; the laſt of theſe has le ſtalks of flowers growing out of the main bloſ- ns. Theſe plants are increaſed by parting their ots, either in the ſpring or autumn ſeaſons, and love inding ſoil. They make pretty edgings for flower- ds; but part their roots every ſpring-ſeaſon, other- e they decay and degenerate.

Carnation or July-flower, is of all others the moſt ightful, as well for its pleaſant ſcent, as for its

beautiful colours; the varieties of it are hardly to
numbered, every year producing new ſorts of it. I
divided into five claſſes, and diſtinguiſhed by th
names, Picketees, Painted-ladies, Beazarts, Fla
and Flames: the flowers of the Picketees are alw
of a white ground, ſpotted with red or purple:
Painted-ladies have their petals tinged on the upp
ſide, either with red or purple, and the under-ſide
their flower-leaves is plain white; the flowers of
Beazarts are ſtript, or variegated with four diſti
colours; the Flakes are of two colours only,
thoſe always ſtript; and the Flames have a red grou
always ſtript with black or very dark colours. E
of theſe tribes are very numerous, and the time
their flowering is uncertain; for theſe put into
ground about March, will blow ſooner than th
ſown in May; however the height of their bloom
about the middle of July. Theſe flowers are pro
gated by ſeed, cutters and layers; we have the
ferent kinds from the ſeed ſown in March or Ap
according to the ſeaſon; layers muſt be laid in Ju
and muſt be kept moiſt. Cuttings muſt be taken
and planted together in a bed in Auguſt, and let ſt
till May, and then tranſplant them.

The pinks moſt commonly cultivated in gard
are, the red double-pink, the white double-p
the double pheaſant-eye pink, the dwarf do
mountain-pink, the China-pink, Dobſon's-pink,
ſome others, beſides the common ſingle ones ra
from ſeed ſown in drills or lines about March.
firſt three of theſe blow about a foot and a half h
The dwarf mountain-pink is a ſlow grower, an
ſeldom above eight inches high. Theſe four kind
pinks are all raiſed from ſlips planted in Auguſt
very early in the ſpring. The China-pink is very
rious, for its ſtrange variety of odd colours, and
ſtra

ange variegations in the middle of its flowers; it is
iſed from ſeeds ſown in March, and bloſſoms the firſt
ar about a foot high: but if you cut off its bloſſoms
hen they appear, and ſuffer it to flower no ſooner
an the ſecond year, your ſucceſs will be better by
is management.

Of the roſe-tree and its kinds, there is more va-
ety propagated than of any other flowering-tree or
ub; the flowers are moſt pleaſant and delightful
their agreeable ſmell and beauty; one or other of
em will bloſſom for nine months of the year; they
diſtinguiſhed by the following names, firſt the
amon-roſe, which is the moſt forward blower;
monthly-roſe, and the cluſter monthly-roſe, which,
planted againſt a warm wall, will begin to blow in
rch or April, and will continue to produce flow-
for near three months; and after they are out
flower, if they have the tops of their branches
ned off, you may expect a ſecond crop of roſes
m the ſame tree in autumn, which will continue
ir bloſſom till near Chriſtmas, if the weather be
n: the damaſk-roſe, which begins its bloſſom in
y, and continues flowering for above ſix weeks:
roſamundi-vermilion, with the white, red and
low roſes, begin their bloſſoms ſomewhat later than
damaſk; and, laſt of all, the centifoli, or pro-
ce-roſe, ſhews its ſurpriſing flowers. But beſides
ſe ſorts, there are many others; and altho' the ſe-
al ſorts of roſes differ in their times of flowering,
they are all propagated after the ſame manner;
y love a ſtrong ground, and delight ſo much in
iſt places, that they will grow in water; they may
er be raiſed from layers or ſuckers: the firſt may
laid down in September or October, and the ſuck-
may be taken from the old roots in the ſame
nths, or about March, and tranſplanted immedi-
ately,

ately, before their roots, which have but few fibr grow dry: but if neceſſity obliges to keep them o of the ground for ſome time, lay their roots in wat for five or ſix hours before planting.

The guilder-roſe bears its bunches of white bloſſo very large in May; this plant ſeldom riſes very hig it delights in a ſtrong ground, and may be raiſed fro ſuckers taken from about the old root, either in Mar or September.

Of jeſſamine there are three kinds which bear fro known by the common names of White-jeſſami Yellow-jeſſamine, and Perſian-jeſſamine. The firſt theſe is capable of reſiſting the moſt ſevere weath it is generous in its growth, ſhooting ſometimes mo than ſix foot in a ſummer, and produceth its wh fragrant flowers about June, and continues bloſſomi till September. It is propagated by layers or cuttin and will grow in any ſoil. The time of laying t young ſhoots of this plant into the earth is abo September, and at that time cuttings may likewi be planted about a foot long, taking care that t knots be under ground. The yellow-jeſſamine has leaves more ſhining than the former, and its flow not much unlike the yellow Indian-jeſſamine, and propagated the ſame way as the other. The Perſi jeſſamine bears flowers of a purple colour, but ſeld makes a large plant; it is raiſed from layers or ſuck and loves a light ſoil.

Honey-ſuckle; there are ſeveral kinds of it, whi are diſtinguiſhed by the names of the Forward-blowe Latter-blowers, Scarlet-flowered, and Ever-green H ney-ſuckle: theſe are all twining plants, and are rai from ſeed, layers or cuttings, ordered like thoſe of t jeſſamine in September or October; they love a ſha and are quick growers, ſome one or other of th flowering the whole ſummer.

The lilac; there are three ſorts of it, the blue,
ple and white. It is a plant which grows to a
tty large tree, bearing its bunches of blue, or ra-
r purple flowers in May. They may be raiſed by
ing down the young branches in March, or by ta-
g off the ſuckers, and planting them in a light ſoil
the ſame month, or in September.

The ſyringa has two qualities, *viz.* that the leaves
te like green cucumbers, and the bloſſoms ſmell like
nge-flowers. This ſhrub is propagated by ſuckers
en off in March or September, and puts forth its
grant white flowers in May, and continues blow-
for ſix weeks; it will grow any where, and, if
nted in a ſhady place, will ſhoot vigorouſly.

The mezereon; there are three ſorts of it, the
, white, and purple flowering ſorts; the firſt is
mmon enough, but that with the white flower is
e; they are all of them dwarfs, ſeldom riſing high-
than three feet. They flower in January, and have
pleaſant ſmell; they continue a long while in bloſ-
n, and are propagated by ſeed ſown in March, or
ers. They love a loamy ſoil.

The ſenna; there are ſeveral kinds of it, but of
ſe there are only two ſorts which are common-
known and made uſe of, *viz.* the Scorpion-ſenna,
d the bladder-ſenna. The firſt is the moſt beau-
l, the bloſſoms ſhewing themſelves as well in au-
mn as the ſpring. They are propagated either by
d ſown in the end of March, or by laying down
tender twigs in the earth in April or May, which
n took root, and may be tranſplanted without dif-
lty. They love a loamy earth, and grow well in
ade.

The juniper; there are two kinds of it, the com-
n, and that which is called the Sweddiſh-juniper;
th of them reſiſt the moſt ſevere froſts. The ſmall-

neſs of their leaves is ſuch, that an ingenious wo
man may train them up in any ſhape, and by of
cutting them, they will be ſo cloſe, that no ot
plant can exceed them in that reſpect. It delig
in a barren ſoil, ſuch as hills or moors, where
common kind grows very plentifully. The ber
may be ſown about March, in a light ground, with
watering them, or giving them any rich manu
They come up in two months after ſowing, and
remain two years in the ſeed-bed before they
tranſplanted, taking great care to keep them free f
weeds.

The piracantha has many perfections which
not found in other evergreens, beſides the beaut
its leaves, the bunches of white leaves which it
duces in May are very ornamental, and its c
like beads, which hang upon it all the winter, af
us a moſt delightful proſpect: to theſe perfect
the ſtrength of its thorns may be added, which m
it one of the moſt uſeful plants for hedges. It
be trained into balls or pyramids, which will be
moſt covered with ſcarlet berries, when nature ſe
to reſt in other things. It may be raiſed either
the berries, or from layers or cuttings. The be
of this plant, when they are ripe, ſhould be gath
and after being laid to ſweat for ſome time, ma
put in ſand or earth till the autumn following,
they may be ſown in the nurſery-beds. They wi
a long time in the ground before they begin to ſprin
the hollies: but Mr. Bradly, in his new improven
&c. for gaining a year's growth of them, advi
‘ To take a buſhel of bran, and after having m
‘ the ſeeds or berries with it, wet the whole very
‘ with rain or pond-water, and let the prepar
‘ remain for ten days, without any diſturbance,
‘ veſſel of wood or ſtone. About three days

the mixture has been prepared, it will begin to heat, and ſo continue to ferment for thirty or forty days, if it be carefully ſprinkled from time to time with warm water as it begins to dry. The heat of this wet bran will prepare the berries mixed with it, and put them into a vegetable poſture, in about a week's time after the ferment has begun, and then they may be ſown in nurſery.' They are very difficult to tranſ- ant, having five fibres at their roots; therefore, hen they are come up, and have ſtood a year or o at moſt, they ſhould be planted out where they e to remain. In the removal of this, and other ees of the like nature, you muſt be careful to keep e roots from drying before they are put again into e ground. To raiſe theſe plants from layers, lay wn only ſuch branches as are tender, and of the tſhoot; which rule muſt be obſerved in the laying all evergreens. About May or June, cuttings the freſh tender twigs may be planted in pots of th, watering them frequently, and keeping them from e ſun till the following winter, at which time warm- ſs will be helpful to them, and prepare them to ke a ſtrong ſhoot in the ſpring. Plants raiſed in s manner may be tranſplanted with greater eaſe and s hazard than thoſe raiſed from the ſeeds, or by ers. The piracantha delights in a dry gravelly , and will grow to be a large tree if rightly ma- ged, and kept from dung or other rich manure, ich will deſtroy it.

he ſtrawberry-tree, altho' an exotic plant, thrives y well in our climate; it is a moſt beautiful tree, ſſoming twice a year, and has its fruit ripe in the ter. It is very ſcarce here, but grows plentifully reland. This plant is not ſo well diſpoſed to be ned up into nice ſhap'd trees, as many others, but akes a pretty hedge, and is very ornamental in

wilderneſs walks. It loves a light gravelly ſoil,
may be raiſed either from ſeeds or layers. The f
muſt be gathered about Chriſtmas, and laid to dry
a month, and then bruiſed and mixed with ſand, to
ſown in pots of light earth, and covered about a q
ter of an inch with ſifted mould. This work muſt
done in March. The heat of a hot-bed will m
help the generation of the ſeeds, which ſhould
frequently watered with pond or rain-water, till t
come up. The moſt tender ſhoots of this tree m
be laid down about September in ſine earth, and
take root in a year's time, if they are kept moiſt
frequent watering; but will not be ſtrong enough
tranſplant till the ſpring following.

FINIS.

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# A
# SHORT TREATISE
ON
# OREST-TREES,
## AQUATICKS, EVER-GREENS,
## FENCES and GRASS-SEEDS,

BY THE
RIGHT HONOURABLE
THE LATE
## ARL OF HADDINGTON.

*EDINBURGH:*
ted for JAMES REID, Bookseller in LEITH.
M.DCC.LXV.

BRITISH MUSEUM

# DIRECTIONS

# FOR

# Raiſing of FOREST-TREES.

## CHAP. I.

## INTRODUCTION.

HAVING been a diligent planter for upwards of thirty years, and having had more trees of my wn planting, than, I believe, any man ever planted his lifetime, I have vanity enough to think my perience may be of uſe to my friends: and there- re I ſhall, in as plain and diſtinct a method as I can, ll the methods I have uſed; which, tho' they differ om almoſt all the treatiſes extant upon this ſubject, t I dare anſwer there ſhall be nothing advanced in eſe papers, but what I can get atteſted to be matter fact, and can ſhew the demonſtration of upon my wn grounds.

I have had great aſſiſtance from Mr. Evelyn, who ote long ago upon this ſubject, and appears to be ll ſkilled in it; yet he has been too credulous, and ilds too much upon niceties, that are altogether fling and unneceſſary, which makes me differ from m in many particulars.

Moſes Cook, gardener to my Lord Eſſex, hath publiſh- a very uſeful book upon the ſame ſubject, which has ewiſe its own blemiſhes. All that have written in gliſh ſince their time, have copied from them, even

to the ſetting down of their errors; and not only
but have added many more of their own. Some ha
written like philoſophers, entertaining the fancy wi
airy, abſtracted ſpeculations, inſtead of conveying pr
tical inſtructions to the inquiſitive reader; whilſt
thers, like quacks, promiſe a great deal, but perfo
nothing.

I ſhall not take up time in treating of the differ
ſoils proper for planting; but ſhall only tell in ſho
that I never met with any ſoil, that ſome one or ot
would not grow on. And as I go along in treating
every different tree that I have experience of, I ſh
tell the ſort, and the way and management of each ki
from its being in the ſeed till it is fit for the ax;
ginning with

## The OAK.

Which is raiſed from the ſeed called the Acorn:
thors write of different kinds, but I know only of
which I had all from England. It is certain that the
we have from abroad, for wainſcotting, and for
rels, is of a different kind; but I never could proc
any acorns from theſe countries.

*Raiſed,* I have raiſed many trees, by ſetting
acorns in the ground where they were
to be removed; and I do think it the beſt way, if
vermin could be kept from deſtroying them. I h
ſet ſome, with good ſucceſs, in very bare poor grou
when the ſame was fenced, and no cattle ſuffered
go there, the graſs has grown ſo rank, and it
down and matted ſo cloſe together, that the yo
ſhoot could not force its way through; and the fi
mice, harbouring there, have deſtroyed me m
buſhels of acorns; ſo that the way I have taken of

*from the Seed-bed;*

to make a ſeed-bed of trenched ground, which the acorns are put, with the alleſt end to the earth, and then cover- half an inch deep. The beſt ſeaſon for this work when the acorns drop in October, though I never uld get mine ſo early; but I always put them in ground as ſoon as I could procure them, if it was t in froſt. After they peep above ground, they may t ſome earth ſifted upon them; eſpecially if ſet in tober, for the froſt may ſwell the ground and ſpue em out, and in that caſe they muſt be re-placed with finger. After they have been in this bed for two l years, I adviſe the lifting of them, tho' ſome are their ſtanding another year, by a notion that an a- rn in two years cannot have ſpent all its full ſubſtance o the plant; but I have been careful to obſerve that, d I could never perceive any part of it conſumed. I therefore propoſe, that, er ſtanding two years in the ſeed-bed, y ſhould be planted where they are ſigned to ſtand: I thought this had en a notion of my own; but I ſaw, ſince I have uſed is method, a wood planted by a gentleman this way, at was in a very thriving ſtate. What put me on mak- g this experiment was, that the trenching ground for rſeries was expenſive, and the keeping it clean was great trouble; and I had, for many years, ſet out y firs from the ſeed-bed to where they were to ſtand, th good ſuceeſs, as I ſhall explain when I come to eat of that tree. Another reaſon was my being con- nced, that every removal of a tree checks its growth, d if I could raiſe them all without tranſplantation, would be a great advantage.

*tranſplanted from Seed-bed.*

All who have wrote on oaks, adviſe the cutting off e carrot-root or pap, which I think quite needleſs, d therefore never practiſe. The writers on planting

take up much time in giving directio
*Soil.*
to the ſoil proper for oak; but, as
a tree that I like much, I have plant
every where; and find it thrive in rich, poor, midd
heathy, gravelly, ſpouty, clay and moſſy ground;
upon the dead ſand, and in ſhort on every ſoil t
have: And it is viſible that my oaks grow faſter
any tree I can plant, the aquaticks only excepte

Having ſaid ſo much, I ſhall now mention th
ſtance I would have oaks planted at. In all na
woods the trees ſtand cloſe to one another; bu
time the leaſt thriving decay, or, by often cuttin
ver, and the dropping of the trees that are lef
timber, periſh: by this means large oaks ſtand
great diſtance; but I can by no means allow
they always did ſo, or that we ſhoul
*Diſtance of Young Oaks.*
a new plantation, ſet oaks at forty,
or ſixty feet diſtance; far leſs, as
modern authors aſſert, at as many y
For tho' we ſee great trees now ſtanding, it is
than probable that they were all formerly in a thi
as Mr. Cook hath made very plain in his chapte
oaks; and experience may further teach us, th
we ſhould plant at that diſtance in a country ſubje
winds, we ſhould have buſhes, but never trees
that it is requiſite that we plant very thick, as
be ſhown afterwards.

*Pruning.*
We now come to pruning. No
ſhould be allowed to fork, I mean to
out two ſtems: one upright ſhoot ſhould only be
couraged; for when there are two or more, th
that ſhould run all into one, is diſperſed into many
by this neglect, many millions of trees never co
the fourth of the value that they had arrived at, i
pains had been taken to have them trained up to
ſtem; ſo I recommend in the beginning to prune thi

all other foreſt-trees when then are young; at the ſame time I am not for leaving the tree quite without branches; for ſome are neceſſary for drawing up the ſap; but I would only leave a few. If the tree hath been for ſome time neglected, begin at the undermoſt branches, and take them and the next row entirely away; but when you come higher up, prune off only a branch here and there; or ſhorten ſome of them, which muſt be cut away cloſe by the body of the tree the next ſeaſon: and take care to thin the head that the wind may get through; for, if the tree is top-heavy, the wind will take ſuch impreſſion on it, that it will either break ſhort, or be laid over, and perhaps never will be a ſtraight tree; by this way of doing, a tree may be brought to what height one pleaſes, without any more branches than what are neceſſary for drawing up the ſap, and to keep the tree upright. The cleareſt directions for this work are to be ſeen in Moſes Cook's 10th chapter, beginning at the middle of page 57th, where, I think, he names the moſt proper ſeaſons for the firſt and ſecond prunings of the oaks, and all other trees that are not ever-greens; and to him I refer my readers. Some lop, by that I mean, cut off, the top of the oaks; but I entirely diſapprove of that practice; for, the greater the height of an oak, the greater the value.

There is another way of managing this, and all other trees, that I think may, if begun in time, be better than pruning; and that is, by rubbing off in the ſpring-time the buds from the ſides of the tree, ſince, by checking the ſap's breaking out on the ſide, it forces it to riſe up to the top of the tree.

*Budding.*

It were loſs of time to tell the uſes of this tree, ſince every body knows the value of it. Having thus far treated of the oak, that hath ſo long maintaine its title of the *King of the Foreſt*, I ſhall next ſa ſomething of

## The BEECH.

They who write of trees, mention two kinds this; but I know no difference. Th *How raiſed.* are to be raiſed from the maſt, which, it could be preſerved from the vermi ſhould be ſet in the ground without ever moving i but that is ſo uncertain, by reaſon of the mice, th I am forced to ſow them in ſeed-beds, and to tre them every way as the oak; ſo that I ſhall repeat n thing. But there is one great difference? for, as ſaid, the oak will proſper in any ſoil, y *Soil.* the beech is very ſhy. In good land th thrive very well, but I think not in cla and I am certain, not at all in wet ground; but, for d and gravelly, none better. It is a beautiful tree, a tho' when young they grow ſometimes crooked, y as they grow older, they turn ſtraight. This t ought to be pruned and diſbudded as the oak.

It makes a fine hedge for beauty in a wilderne but I doubt it is not good for coppice, ſince I told, it does not riſe kindly from the root when down; but of this I have no experience. It is a t very proper for avenues, walks and groves; bu think, were the timber of it leſs uſed for bed-ſte chairs, &c. it would be better; for the worm take very ſoon. In other countries it gives a great p for fuel; but, as we have ſo many coal-mines moſſes, I hope we ſhall never be reduced to the ex mity of cutting down our woods for firing. I now p ceed to

## The ELM.

There are many different kinds of this tree, but I all begin with that which hath grown long in this untry, and is called the *Scots Elm*; of which there e many huge trees, both as to ſtature and greatneſs, maining in many places, that if they had, in their uth, met with ſuch disbuddings and prunings as I ve adviſed, would have been ſurpriſingly beautiful d of great value; whereas they have been allowed fork and run out into great arms; which is an irre-rable misfortune, ſince the timber of the elm is th ſtrong and of a fine colour, and prettily veined, ry little inferior to the Mahogany, and ſome of the eſt-India woods, ſo much demanded for tables, chairs, eſts and cabinets.

*Raiſed.*

This kind is propagated by the ſeed, ich they carry plentifully every year, d is to be gathered about the beginning of June, ich is the ſooneſt they ripen in this country, tho' r. Evelyn and his followers affirm, that it is ripe in e beginning of April.

The way of ſowing it, is in a bed well trenched d finely raked; then thruſt off ſome of the ſurface the bed with the back of the rake; lay the ſeed o-r all the bed, as the gardeners do when they ſow rrots; then draw the earth over the ſeed. When e plants have ſprung half an inch, it will not be a-iſs to ſift on ſome fine earth upon them, to fix them e better; keep them free from all weeds for two ars; then ſet them out for good and all.

*Soil.*

I have always found this tree ſhyer as the ſoil, than either the beech or the k, and I cannot ſay that they thrive unleſs upon good ound; when ſuch is trenched and kept clean, they proſper and thrive exceedingly: but, in bad ſoil, th are naſty, ſcabbed and hide-bound things, ſo that, my opinion, it is loſt labour to plant them there.

*London Elm.*

Another kind of this tree is, what I have he called the *London Elm*, which grows in great plent all the hedge-rows about that city: long walk at Holland-houſe, and the comparable one now hedged at Kenſi ton-garden are of this kind: it hat much ſmaller leaf than the one I have been writing The cuſtom in theſe places is to cut off all the ſi branches cloſe by the body of the tree, and only le a very ſmall head, ſo that in winter they look, i manner, like a very high hedge, and, in the ſpri are as bare as a May-pole, except the very ſm head; how oft they repeat this operation, or w they make of the prunings I cannot tell.

Of this tree they make great uſe for pipes for c rying in water to the town, and preſcribe ſeveral ther uſes for it: but as my deſign is to teach raiſing of trees in the cheapeſt and eaſieſt way, I r my readers to Mr. Evelyn, or the carpenters, for uſe of every tree.

*Raiſed.*

I believe this one doth not carry any ſeed; bu is eaſily raiſed by layers and ſlices ta from the roots, or by ſuckers.

Mr. Evelyn adviſes to propagate them after following manner: “Take truncheons off
“boughs, and arms of elms, cut to the ſcantlin
“a man's arm, about an ell in length: theſe m
“be chipped on each ſide oppoſite, and laid in t
“ches about half a foot deep, covered two or th
“fingers deep with good mould: the ſeaſon for
“work is the end of January and beginning of
“bruary, if the froſt do not hinder; and after
“firſt year, you may cut or ſaw the truncheons

n as many places as you find cauſe, and as the houts and rooted ſprouts will direct you, for tranſlantation.”

nother method propoſed by him is, “ Lop a young lm, the lop being about three years growth, in he latter end of March, when the ſap begins to reep up into the boughs, and the buds are ready o break out ; cut the boughs into the length f four feet ſtanding, leaving the knot where the ud ſeems to put forth in the middle ; enter theſe hort pieces in trenches of three or four inches deep, n good ground, *that is*, in good mould well troden, and they will infallibly procure you a good rop.” Beſides Mr. Evelyn's authority, I have been iſed to the ſame by a gentleman who pretends to a great planter ; but as I have only tried them this ſpring, I cannot promiſe for the ſucceſs as to this d of elm.

s this kind is not raiſed in the ſeed-bed, I believe ill be proper to have a nurſery ready to ſet them or two years: this is a piece of nd trenched, and made free from es, roots and weeds : in this ſet r young elms, thus raiſed, at a foot's diſtance e- way ; and after two years ſtanding tranſplant n for good.

*Nurſery, what.*

here is another kind of this tree, d the *Dutch Elm* ; this will grow n much coarſer ground than either of other two. I am told they never grow to thirty in length ; but as all I have are young, I have experience of its ſize ; neither do I know if it f any uſe. It puts out a great number of trees ſuckers, ſo that it ſpoils all graſs-walks within the h of its roots. Some uſe this kind for hedges ; I think neither it nor the Scots Elm fit for that purpoſe,

*Dutch Elm.*

purpoſe, their leaves being too broad and diſagreea rough.

One thing I had forgot, which I ſhall ſet do here, as it is neceſſary for all the trees I have na or am to name, that, when they are ſet out for go and eſpecially at two years old from the ſeed, car taken to keep the graſs and weeds from growin bout the roots, otherwiſe they may either choak ſtrangle the young plant; and this I adviſe to be d with all the young plants, till they come away heartily, that neither weed nor graſs can ſtop the their growth. I come now to

## The ASH,

*How managed.*

*Plants.*

*Soil.*

Only raiſed by the ſeed, called the Aſhen- They are ripe in October, and ſhould then be thered and laid in a bed, as I directed about the ſeed, and covered the ſame way: th do as ſoon as they are gathered: but they are ſown this ſoon, they do not above the ground till the ſpring c twelve months after. I chuſe to manage them way rather than be at the trouble of laying the ſand for a year; after they appear ſhould be let ſtand, and carefully we for two years, and then ſet out for g I adviſe the ſame care in keeping them clean abou roots, the diſbudding and pruning them, the other trees I have mentioned. It is to ſay any thing of the ſoil they moſt de in; for tho' the rich one is beſt, generally, for all of trees; yet ſometimes an Aſh is ſeen to thrive well where it is quite otherwiſe, tho' within two of the ſoil there are poor hide-bound ſticks. I not if cutting ſuch by the ground in the ſpring ake them thrive the better, but I ſhall try it. This akes me wonder why they who have wrote about oods, ſhould lay it down as a rule, that, in plant- g woods, every third tree ſhould be aſh, ſince it a tree very ſhy, if the ſoil is not proper for it. In od ground, trenched and kept clean, they thrive odigiouſly: it is long in putting out the leaf; but lds it long the ſame ſeaſon: they ſhed them as ear- as other trees.

It is of great and general uſe, and therefore it uld be encouraged where the ſoil is proper for it; t ſhould not, they ſay, be planted near corn-fields, roots running within reach of the plough, and its ves taint the graſs. This tree carefully managed, I have directed, may be brought to great height l largeneſs, and of conſequence value. The next I ll take notice of is

## The WALNUT.

Only propagated by the nut: they talk of different ds of it; but as all we get are from France, they m to be of the ſame kind.

This tree, of all others, ſhould, if poſſible, never removed, ſince it ſuffers more by it than any tree now; but the vermin are ſo fond of it, that it is y hard to preſerve a ſingle nut ſet, to ſtand from g eat by them: ſo I order them to be managed he oak. The ſide-branches and buds of this tree ld be carefully taken off; and, what I can never too much againſt, forking ſhould be prevented; no tree is more apt to fork than this one, and e loſes more of its value by doing ſo. This is moſt valuable tree we have; had we greater plen- f it, the furniture of our houſes, ſuch as bed- s, chairs, *&c.* that are now commonly made of beech, would be much handſomer, and more durab Beſides, it is much ſought after by the cabinet-ma ſo that I wiſh it were more propagated. The nex ſhall treat of is

## The CHESNUT:

Which, tho' it can be raiſed from layers, co much better from the nut, and ought never to b moved; but as that is ſo difficult to the next beſt way is to manage the all things like the oak.

*Set.*

It is very apt to put out ſuckers from the ro and many ſide-branches, both which ſh be carefully taken off; for as it incl to ſpread much if this is not done, not eaſy to get it to a great height, which, if car taken of it, may be done.

*Pruned.*

Why a late reverend author hath placed the nut among the leſſer kind of trees, I know ſince I have ſeen them very high, and prop onally large; and that there is the remains of on England, that, I think, hath been looked upon as greateſt tree in it.

It is the beſt under-wood except the mapple, therefore is good coppice.

It loves the ſame kind of ſoil as the nut, which doth beſt upon a rich land.

*Soil.*

Whether theſe nuts produced in B will proſper, I have never tried; for, tho' ſome they are perfectly formed, grow hard, and ripen well, yet theſe that come from Fran Spain are much fairer; ſo that I al chuſed to ſet them. I have ſeen a r which a gentleman wainſcotted with nuts of his own planting, which ſe

*Spaniſh and French nuts beſt.*

me very pretty : and Mr. Evelyn tells many U-
of them ; but, as I ſaid before, that *Uſes.*
not my buſineſs. There is another kind, called,

## The HORSECHESNUT,

Raiſed by the nut, which is exceedingly better. I
nk it is the moſt beautiful tree I ever ſaw. It hath
lear, ſmooth, ſhining bark, and naturally grows up-
ht; hath the broadeſt leaf of any tree we have. It
ries a fair flower, moſt of them white,
'I hear ſome have them red, delight- *Beautiful.*
to look at, and is ſucceeded by the
; but then it hath the misfortune to be very brittle,
cannot reſiſt the wind, that ſnaps it
r when it is in its greateſt beauty ; yet *Fit for*
n cut hedge-ways, as one at High- *hedging.*
e, it ſtands the ſtorm, and grows to a
rable height. But then the hedging of trees, in my
nion, takes away much of the beauty they have
their natural ſhape. It puts out its leaves among
firſt of our trees ; but I never underſtood that it
of any kind of uſe ; yet it is very ornamental,
I think, for that reaſon ought to be propagated,
not in woods, like the ſweet cheſnut. I come
to

## The PLANE.

believe this is what in England goes by the name
he Sycamore ; and, as far as I can obſerve, it
ns to have been the favourite tree of this country
he time of our forefathers ; for there is no old
gentleman's houſe, or any place where trees are
o grow, but the plane-trees are the moſt numer-

ous. It is raiſed from the key, as the aſh, but wi this difference, that it ſprings up ſooner after ſowi and the aſh lies a year longer. When manag as I have adviſed of the other trees, it riſes to a gre height and greatneſs, carries a fine broad leaf, a puts out, early in the ſpring, one kind a fortnight b fore the other, which is all the difference I know b tween them. It makes a fine ſhade, and never yie to the winds, unleſs raiſed, when young, under t ſhade of a wall that makes it ſhoot too faſt, and when it gets above it, it is too weak to reſiſt the wi

*Soil.* It is ſhy as to the ſoil, but will thri where the elm doth. I have ſeen a room the ſame gentleman's houſe who wainſcotted one w cheſnut, done with this tree. It looks very well a takes a good ſkin, but I am told it is very ill to wo and takes the worm very ſoon, unleſs varniſhed both ſides. I am lately told, it laſts longer driven the earth, by way of poſt, than any other timber t hath been tried. Mr. Evelyn and Mr. Cook ſay, t deer will not touch it, tho' in a park: this I have he likewiſe denied; but theſe authors ſay the ſame of

## The HORN-BEAM.

They commend the raiſing of this tree from ſu ers or layers; but as I raiſe all by *Raiſed.* ſeed that carry any, I never tried t way. It lies as long in the ſeed-bed bef it peeps as the aſh, and ſhould be ordered the ſa way. It is ſaid that it comes to be a large tree, all of them in this country are but young; nor di ever ſee a tall one of them; for where they are greateſt plenty, as in Hertfordſhire, they are all, far as I could obſerve, pollards; and I have ſee putting out freſh ſhoots from the lopped heads, w e tree was quite hollow, and only a ſhell left I hear e timber is of uſe, but I know not for what. They well in hedges, and keep feathered to the bottom, d, like the beech, keep or carry the withered leaves l the new ones in the ſpring do thruſt them off. his makes them a great ſhelter to the trees that are be ſurrounded by a hedge of them.

When deſigned for this uſe, they ſhould be clipped the ſides only, and neither pruned nor diſbudded, t, if for a tree, ſhould be both, and never ſuffered fork. I now proceed to

## The SERVICE-TREE.

I am told of many kinds of this tree. I have but , which hath a dark green leaf and pretty broad, l white on the underſide. It carries a cluſter of ite bloſſoms, ſucceeded by one of red berries.

They are raiſed by the fruit; and make *Raiſed.* agreeable variety when mixed with other trees: whether it comes to be a large tree, or is of any I am ignorant; tho' I have heard of one kind of ice-tree that is of as much value as the Maho- y. I make it my buſineſs to get ſeed of every I hear of, to make trials; but I go on to

## The BLACK-CHERRY.

This is called the Geen here, and is of two ſorts: fruit of the one is red, and of the other black: , if large, are very delicate, and much improved grafting. It riſes to a great height greatneſs, and is not ſhy as to the ſoil *Soil.* ſet in; hath a fine ſhining bark, is in t beauty in the end of April, and beginning of , when it is all covered with white bloſſoms, and

in July with its fruit, which it ſeldom fails to carr
Mr. Cook talks much of this tree. It is very brittl
yet 'tis ſaid they make frames of it to their ruſh-bo
tomed chairs in Holland. It ought, in my opinio
to be propagated. I ſhall now write of a very bea
tiful tree,

## The QUICK-BEAM,

For ſo it is called in England, but here the Row
or Rhoddan-tree. The branches of this tree gr
almoſt all upright, ſo that it is difficult to keep it fro
forking, yet may be done with care. It hath a ſmoo
bark, a narrow leaf, and carries a fine cluſter of flo
ers in May, that makes a fine ſhow? and the plenti
crop of red berries which hang on it, gives it a v
rich look, and is a great relief to the thruſhes
black-birds.

*Raiſed.* It is eaſy raiſed by the berries; rub off
pulp, and ſow the ſeed in the ſeed-b
Do the ſame with the black-cherry
ſervice. The quick-beam ſeed is two years in
bed before it peep, as the aſh and horn-beam.
ver ſaw but one of this kind that was large; it
been cut down, and came up in three great bran
from the root, and therefore I doubt nothing of t
growing great and high enough.

It thrives almoſt in every ſoil, and proſpers on r
where there is very little thickneſs of earth.
told by a friend, that, unleſs the earth is now
then ſtirred about the roots of them, they grow
bound and unthriving; but this, ſhould it hap
would be eaſily remedied, I think it ought to be
planted: It hath been little made uſe of in Eng
till of late, that they are got into the gardens of

ſin

gton. Mr. Evelyn tells its uſes ; but I ſhall name e which he doth not mention, which is, that the rk ſells to the tanner's with that of the oak.

I go now to a tree that I cannot charge my memo- with having ever ſeen in England ; nor did I even e it ever mentioned in any author, which I have ondered at ; it is called

## The LABURNUM,
## OR
## PEASE-COD-TREE.

I ſhall firſt deſcribe it, and then tell how it is raiſ- It hath a yellowiſh thin bark, with leaves almoſt the ſame colour, ſhaped like the Trifoil. It puts out lower like the lilly-aſh flower ; only it ſtands up, d is white or purple, but the laburnum is yellow, d hangs down like a bunch of grapes.

*Fruit.*

*Raiſed.*

ave ſeen ſo many on a tree of mine, t it looked as if it had been all yel- . After the flower there comes as many ſmall peaſe- ds as there were bloſſoms, full of ſmall peaſe, which en ripe are gathered and threſhed. They do not ue what ſoil they are ſet in, nor do they require ch looking after : They are ſown in a , and removed at two years, and n managed like other trees. The hares ſo fond of them, that I ſet a great many of them keep theſe creatures from my other trees : They are ly bitter ; both the bark and the ſeed are a ſtrong mit. I have of them pretty high, and, I believe, with e may be trained up to great trees.

he timber is very hard, and of a fine colour, *viz.* right yellow with blackiſh purple veins. Were it e enough to be ſawn into planks, it would make moſt charming tables. The quick-beam and this tr in a row, planted alternately, have very good effe I go on to

## The MAPPLE.

It is to be raiſed from ſuckers and layers, but b from the key, like the ſycamore; which lies as lo without ſpringing as the aſh, and ſhould be manag in every thing like it.

Tho' we have few large trees of this kind in th country, yet I have ſeen them very great in Englan 'Tis a beautiful tree, but the dropping is ſo pernicio to every other plant, that no tree will grow under i tho' the mapple itſelf will thrive under any thing, t fir (which is the very worſt for under-wood) not e cepted.

I have little experience of this tree myſelf. M Cook ſays, it affects dry ground moſt, or a bank.

Mr. Evelyn is very eloquent in the praiſe of this ti ber, and is very extravagant when he ſpeaks of t high value which the ancients put upon tables of I know it is much ſought after by the cabinet-make and makes a fine hedge in a wilderneſs, changing t colour of its leaf twice at leaſt every year. I pr ceed to

## The LIME.

It is beſt raiſed by the ſeed, tho' I could not raiſe a that way; the reaſon I take to be is, that it doth n come to perfection here, and not every year in En land. I have often given commiſſion to get it fro Holland, but theſe I employed always neglected but I have raiſed many by layers. There are two kin of this tree, both of which are raiſed the ſame way one with a large round leaf, and the twigs almoſt red as coral in winter. This I prefer to the other, ich hath green twigs, and the leaf more pointed, l leſs.

*Pruned.*

t ſhould be much pruned ; yet it ought to be done h the greateſt diſcretion : for if it is owed to grow thick in the head, the d may harm it.

*Uſes.*

t makes a fine hedge, either feathered from the t, and then it may be ſet at two foot ance, or ſet from ſix to ten, trained o what height you pleaſe, with a clean n, and then hedged above that, and either way ve- eautiful. Some rear them to ſtandards, and then them in pyramids ; but I do not like that way, as ooks too conſtrained : beſides the natural ſhape of ne looks better. It grows to be a large tree ; tho' ink it is more for ornament than uſe, yet Mr. E- n finds many. I now ſhall ſay ſomething of

## The HAZEL,

*Uſes.*

ho' I reckon it rather a buſh than a tree. They raiſed from the nut, and managed like the other I have mentioned ; but as they are of much uſe, I have been at leſs pains about n. They ſerve for under-wood, and for ing up faggots, and are of great uſe he ſieve-maker ; but after all, the demand for this t is but very ſmall. Dry ground is re- mmended for them, but I am ſure I ſeen them in a quite different ſoil.

*Soil.*

ſay nothing of the two kinds of plantains, tho' are coming in requeſt here, as I have no experi- of them. I therefore conclude this chapter, and n

CHAP.

## CHAP. II.

## Of AQUATICKS.

### The BIRCH.

AN amphibious tree, that thrives upon rich, po wet, dry, ſandy or rocky land.

It hath a ſeed, but I am not skilful to direct h to manage it; but as ſoon as I am, I ſhall let it known: The method I have hitherto taken, ha been to gather them in the woods, where they co up plentifully from the ſhaken or blown ſeed; but the proprietors of theſe woods are not careful enou to keep cattle from paſturing in them, they are m ly eaten over, and therefore I was obliged to cut th cloſe when I planted them: But as they begin come up in my own woods, where no cattle com hope to be ſupplied that way, tho' the raiſing th from the ſeed ſhould miſgive, which I wiſh it m not, becauſe theſe thrive in whatever ſoil.

It ſometimes comes to be a great tall tree; it is cellent for coppice, ſmells ſweetly after rains; and tree is more aſked after by the country-people, b for their houſes, ploughs and utenſils of huſbandry.

The way I take to remove them, is to draw th with great care, either before or in autumn; and them where they are to ſtand for good. After t have ſtood for a year, cut them cloſe by the gro in the ſpring, this will make them riſe in tufts, they may be eaſily reduced to one ſtem, and ſo brought to a tree.

By topping them in the ſpring, they extract a quor, which, after fermentation, becomes a ſpiritu

delici

licious wholeſome wine; but as I am not writing bout brewing, I ſhall refer you to the two authors I ave ſo often quoted, and to the tranſactions of the oyal Society, for the receipt of this wine.

I have planted many of this kind of tree, and intend plant many more of them, if I live, ſince I think em more profitable than

## The ALDER,

For which tree I have laid out more money than for the reſt about this place; for I got them from Holnd, and was not only impoſed upon as to the price, t had the misfortune to employ unſkilful people to nt moſt of them: They ſet them ſo deep that they tted at the top, and died afterwards; ſo that they re twice cut over: They are more backward in iving than any tree about this place; yet, I believe, re are more thriving ones, than, were they ready the axe, I could get ſold. It is a handſome tree, th a broad, dark green leaf.

I know not of what value the timber is; but the nches cut, then fagotted, and laid in the bottom of ins for carrying off water, and whins or furzes d a top of them, makes it ſo that the ploughs go on dry ground: This I have often done. The de of this tree doth no hurt to the graſs.

I have been ſo little pleaſed with this kind, that I ve not been at the trouble to know how it is raiſ; only I have cauſed gather them amongſt the old es, as I do the birch. They ſay they will do by ttings laid ſome time in the water, then ſet like wilws.

They grow both in wet and dry ſoil. Mr. Evelyn ds they are of great uſe: the beſt I know of I have d, and that other one of planting them upon the banks of rivers, to hinder the water from maki breaches, the roots of it keeping the ground firm. ſhall now ſay very little of

## The POPLAR.

We have few poplars of any ſize in this country t I know of, but having heard much of their height a greatneſs, I got ſome cuttings of them: They hith to proſper very well: They have a whitiſh bark a green leaf.

What their uſes are, I do not know. They raiſed by cuttings as eaſily as the willow. I wiſh by ſame means I could raiſe

## The ABELE.

But as yet I know no other way than by the yo plants, that run from the roots of an older one, where there hath been once a nurſery of them; were they never ſo carefully removed, yet new o ſtill come up: Or if an abele of a middle age is down, the ground about it wrought, and no ca ſuffered to come near it, a nurſery of them may ſo be got. I think the talleſt trees I ever ſaw were this kind, and carried up a great body with them, know none that runs up ſo quick as this does, plan in a bottom where it is ſheltered, but if expoſed the winds, yields terribly. It makes an agreeable riety, mixed with trees of a deeper green; for bark and leaf are the whiteſt of any in this coun They are looked on as of little uſe; but an old g tleman told me, that, in a barn which he had roo with aſh and elm, he put on ſome abele, which ed ſo well, that when the other were rotten, and was forced to renew the roof, he left the abele ſta g as being quite ſound. I hear they make great uſe them now in England.

They thrive ſometimes in ſpouty, and they do ve- well in ſandy ground, where ſcarce any thing can ell be expected to grow, tho' ſome trees will, as I all ſhew by and by. I own I am very fond of the ele, and am reſolved to propagate them as much as can. Now of

## The ASPIN-TREE,

OR

## QUAKING-ASP,

As it is called in this country; it is a tree that I ould not have given place to in my papers, were it t that I am writing to encourage the propagation of ees; and therefore think myſelf bound, as an ho- ſt man, to give every one, who is at the trouble of ding what I write, warning, that I reckon it time own away beſtowed upon this weed, and there- e I root them out wherever I meet with them in grounds. I heard them ſo much praiſed, that I s at a great deal of trouble to procure a quantity them. I find them ſhyer to take with the ground n the beſt tree; but if once they do, there is hard- any poſſibility of rooting them out. They never, t I ſaw, riſe to any tolerable height or ſize. They ay by the time that other trees come to look well. know of no uſe that they are for; but their de- ctive nature I can atteſt, ſuch as running thro' the ole ground, ſpoiling the graſs and every thing elſe near m; ſo that, were my advice taken, they who are ſo ucky as to have them ſhould root them out, and e ſhould attempt to poiſon their grounds with ſo nicious a weed. Next of

## The WILLOW.

Of this there are innumerable kinds. Mr. E names ſo many, and I have been ſo confuſed in ing him, that I could not know which of the chooſe, till I had quite forgot what he ſaid; therefore I ſhall only mention what I know by e rience are the beſt kinds.

The only way I know of raiſing them, is, by tings, either in wrought ground, or by making h with a ſtake, ſharpened at the end, and drove into ground: When the ſtake is drawn out, ſet in willow, and fill the hole round it with earth to it firm.

The beſt kind I know to be raiſed to trees, is, w we call the Huntington Willow: It will grow al as high and great as any tree, if it is allowed to up, and care taken to keep it from forking and arms; or, if lopped above the reach of cattle, it ſoon put out a large head, ſo that, in four or five y at the longeſt, theſe ſhoots may be cut; and, if have room to ſpread, from every two trees a cart of large branches may be got, and ſo on for e four or five years. What advantage would this b thoſe who cannot have coal and peat, but at a great diſtance and expence? I think it is worth conſideration, tho' I had never weight enough to ſuade any in that ſituation to try it, tho' they ground very proper for it. Nor doth the willow, managed, and ſet at a diſtance, at all hinder the ing. Stakes of ſeven or eight foot long, or as as to be without the reach of cattle, may be ſet i bruary or October, without any heads, and, i ſide-buds are rubbed off near the top, all the ſap run up, and ſoon ſet out a head: But the diſbu

ld be continued for ſome years, till the bark grow
rm as not to put out any more: This is neither
t expence nor trouble, and might be of great ad-
tage, and ſave the lopping of more valuable trees;
it burns very well, nor do I doubt but the timber
be of uſe.

have another ſort which might be managed the
e way, tho' not altogether ſo quick a grower, and
ch, ſome of my workmen ſay, is almoſt as uſeful as
oak, for fork, ſhovel, and ſpade handles, nay, for
e parts of carts.

heſe two require a good ſoil, as doth the bay-wil-
, with a bright, ſhining, green leaf.

here are many dwarfs among the willows; but
e I have mentioned may be called trees. I was
e over-perſuaded to lay out too much money upon
ching ground for planting willows for hoops, as
ofitable return; but the yearly rubbing off the
was a conſtant labour, and, when they were cut,
l not get ſo much as to make me think it worth
to continue the trouble.

he very worſt kind of willow is for the uſe of
thatcher, and for binding faggots, beſides a ſmall
of it for making baſkets.

efore I begin to ſpeak of evergreens, I ſhall give
e ſhort directions, beſides what are already men-
ed, as to

## The Method of PLANTING,

which I ſhall deliver the methods I took myſelf,
which I have ſupported by my own experience.

firſt trenched the ground, and then ſet the plants,
l and young; I think from the ſeed-bed beſt. I
hem cloſe to one another, and the youngneſs
he plants made them take root ſooner than if

they had been older, and the ground became natu
to them; the ſetting them cloſe together made eve
one ſhelter the other, and ſo riſe faſter: I then ſow
turnip-ſeed amongſt them; this kept down the wee
the firſt ſummer, and the turnips being dug in
winter, did great ſervice to the trees, and made
next cleanſing eaſier, ſo that the trees grew ſo f
that very much cleanſing was not neceſſary. To
it hath been objected,

OBJECT. I. Trenching is expenſive, and keeping
ground clean from weeds and graſs, coſts labour,
of courſe, money.

To this I anſwer; Trenching is to be done
once, and, as what I have ſaid of the turnip is
I hope that will not be ſo great a labour. I own
expenſive to trench ground; but, when one ſees
advantage it is to the growth of their trees, I
they will not grudge it to their wilderneſs, or
their houſes; eſpecially ſince the other methods I
propoſed for planting, are ſo much cheaper than
hath been put in practice by any body but myſelf,

OBJ. II. This way takes a great many plants.

I anſwer, it doth: But I have ſhown, that
are, for the moſt part, raiſed from the ſeed, whi
very cheap; that the making ſeed-beds is not
and that all trees ſhould be removed for good,
they have ſtood for two years, I mean, after
firſt peeping above ground, ſome lying longer b
they appear than others.

OBJ. III. A great many trees muſt be loſt,
they are ſet ſo cloſe; one muſt kill another, ſinc
ground cannot afford nouriſhment for them all.

I anſwer, I have proved that the expence i
great, and trees ſet cloſe together, force one an
to run up; but, as ſome will always thrive bette
others, theſe, with their dropping on the ſmaller

ake them dwindle, and die at laſt; if ſo, the loſs is
t a trifle. But I propoſe to cut down theſe unthriv-
g ones, and perhaps they may ſhoot up for under-
ood, and by doing ſo, may often yield ſome profit,
d can do no harm to theſe left ſtanding, as I ſaid a-
ut the oaks. This hath been my practice, and I
commend it; tho' I was adviſed to lift the leſs thriv-
g ones, and plant them ſomewhere elſe; but this I
uld not agree to; for, in the taking them up, the
ade muſt not only cut too much from the root of
e plant to be lifted, but of thoſe deſigned to ſtand;
that I think the cutting of them down the beſt
y.

As to the ground's not being able to nouriſh ſo
ny trees; I have ſeen a nurſery that was quite ne-
cted, where the plants, having been at firſt ſet with-
a foot of one another, run up to a great height,
were ſo large that they almoſt touched one ano-
r; now, by my way of cutting them down, they
not require ſo much nouriſhment; but, if it
uld be ſuſpected that they draw too much juice
n the trees left to ſtand, it is eaſy to cut them be-
ground, and ſo to kill them.

ndeed, tho' ſome ſoils are of ſtiff clay, and that
nching is of great ſervice to them, the trees ought
be ſet upon the ſurface, and earth thrown upon
roots to keep them fixed, that the roots may take
r own way.

nother ſpecial caveat that I would recommend, is,
all four-footed beaſts be kept from your ground.
d well enough to hinder all ſheep and larger cattle,
the hares did me much harm; but I do all I can
eſtroy them too.

ow, tho' I have all along adviſed to plant the tree
n the ſeed-bed, yet it may be neceſſary to plant
ks, or carry views thro' incloſures or corn-fields;

in which caſe it will be fit to have plants taken fro the ſeed-bed, and ſet in nurſery-ground, and ſeve times removed, till the roots are ſo uſed to it that th may be tranſplanted, and their branches high enou to be out of the reach of cattle. I own this i troubleſome work; but, as it is in ſome caſes nec ſary, ſo it is good to be provided for it: But I thi ſuch trees, planted this way, ought to be ſtaked ſome years, both to keep them from being ſhaken the roots by the wind, and to be kept firm till th are ſtrong enough to bear the rubbing of beaſts. ſhall ſay nothing of the tranſplanting of large trees the middle of ſummer, ſince that is a work only to done with few trees, and no great planter can e make profit by that way.

One thing more, and I ſhall go to the evergreens. If an oak, aſh, or elm, is crooked, ſlit the ſt quite through the bark, and it will grow ſtraig Where any tree is eat by a beaſt, cut it off bel where it is bit. I ſay nothing to the way of layi trees, or taking off ſlips with a little of the mothe root; nor of ſuckers; becauſe every author hath chapter upon this head, and no gardener but knows I proceed, therefore, to the next thing propoſed, w

## CHAP. III.

### OF EVERGREENS,

### PARTICULARLY,

### FIRS.

AS I believe I have raiſed and planted out more this kind of tree than ever any one man did, I ha have ſtudied the beſt methods of doing it, and have ceived but little help from any author in the manage- ent of it ; for they all write ſo ignorantly about it, at I am ſurpriſed they were not aſhamed to ſet their ames to a book containing ſuch manifeſt blunders ith regard to this one tree. They plainly betray their ant of ſkill, nay, probity ; and, what is ſtill more aſto- iſhing, that, inſtead of correcting the faults of other uthors, they who have wrote laſt blunder moſt : But, I am not to waſte my time in finding out the faults others, I ſhall tell the methods I have uſed myſelf, r at leaſt the ſpace of thirty years.

In one of Mr. Bradly's monthly papers, there is a let- r, ſigned JOHN EDINBURGH, that might have made em who wrote ſince, ſee, that the author of that let- r underſtood what he was about ; yet I differ in ſome ings from him : And therefore I ſhall trace the fir- ee, I mean the SCOTS FIR, from the time of gather- g the ſeed, till the tree is ready for the axe ; and, u may depend upon it, I ſhall ſay nothing but what know by experience to be true.

It is only to be raiſed by the ſeed, which is contain- in a cone, or, as it is called here, a Clog, that hangs wn from the branches. When I began to plant, y trees ſcarcely carried any, and I was at great pains get the ſeed. I heard there were fine fir-woods the Highlands, where the inhabitants bring it in eat quantities to ſell in the low-countries, and om whence I for ſome time brought my ſeed. The ht way of getting the ſeed out of the cones, is ſpread them upon a canvas, or ſome cloth expoſed to e ſun, and to have men attending to carry them under ver, when the ſun grows low, or when it threatens in. The time of gathering the cones is in Janu- y or February, ſo that there is but little time for tting out the ſeed before ſowing-time, and therefore

we are diligent to take every ſun-ſhine to have t
cones opened. When we ſee any number open, w
put them in a wire-ſieve, and ſhake them till the ſe
falls out: This is done till the latter end of Apri
then the ſeed ſhould be ſown, as I ſha
*Seed ſown.* ſhow a little afterwards. The remaini
cones are carried out of the ſun, a
not expoſed to it till the hotteſt time in July and A
guſt; then they open very faſt, and are ſhaken
the ſieve till all the ſeed falls out. This ſeed I ke
in tea-caniſters or dry bladders till ne
*Seed preſerved.* ſowing-time, in a dry, cool place, whe
no fire or ſun comes; but the Highlan
ers are too lazy to be at ſo much troubl
for after they have gathered the cones, they lay the
upon a kiln; this opens them quickly, tho' it often
ver-dries the ſeed that it cannot grow. I own t
cones may be opened before a fire, and little h
done to the ſeed; but great care muſt be taken th
they do not lie too near, or too long before the fire,
it be as bad as the kiln, and endanger your houſe,
mine once was, by the careleſneſs of a ſervant-mai
After this I bought my ſeed from an old garden
till my own trees came to carry enough, from wh
likewiſe I learned this way of keeping my ſeed o
year.

In the end of April, I have ſeed-beds prepared,
trenching them pretty deep, and made as free fr
weeds, graſs-roots and ſtones as poſſi
*Soil for a ſeed-bed.* and the earth made very fine. The
ſhould be of a middle ſort, neither c
nor ſandy, neither too rich nor too po
the earth turned off with the back of the rake, as
gardeners do for carrots; then the ſeed ſown ſo th
as to cover the bed; and laſtly, the earth drawn o
till all the ſeed is covered: then in a few days I ca

t on ſome more fine earth. The next care is to eſerve it from the ſmall birds, who are very fond it, and more ſo when it peeps; for the young ants bring up the husks of the ſeeds upon their tops. once had frames, the breadth and length of the beds, vered with nets; but of late I have boys that ſit them from ſun-riſing till ſun-ſetting, till they are l come up, and the huſks dropt off. If the plants me up thick, as they ought, there will be no need of eeding them for that year they are ſown; t if any appear, they muſt be pulled up ith great care, leſt, with the weeds, the ung plants are alſo drawn. Before the inter I cauſe throw on ſome chaff or ſaw-duſt that hath in ſome time, or what is beat from the x when dreſſed; this preſerves the plants om the froſt, and may hinder the ground om ſwelling, which if it do, it is apt ſpue up the young plants. In theſe beds they ght to ſtand two years, for example, from the lat- r end of April 1734, till the ſeed is ſown in March 736: From thence to the end of April 1736, they ght to be managed in the following anner: When you take up your young ants, let there be ſtanding by a tub of rth and water, mixed to the conſiſtency pap; in this let the roots be dipped: d on the roots of every ſix or ſeven ndfuls of plants, laid in a baſket, lay a handful of is pap, to keep the roots from drying, which they e apt to do with either the ſun or wind, and one an can carry a great many this way. Formerly I had ts ready dug, and the earth with the turf under- oſt filled on, and then ſet the plant with a dibble, king care to ſet it no deeper than it ſtood in the ed-bed; and this is a very neceſſary caution in planting,

*Seed-bed weeded.*

*Kept from froſt.*

*How managed when drawn for ſetting.*

ing all kinds of trees; for deep ſetting is one of th greateſt errors: But now I have got a quicker wa

*How the firs are ſet out.*

I make one to go with a ſpade, wh ſtrikes it into the ground, preſſes it bac wards and forwards till the ſlit is mad wide enough to receive the root, whic the man with the basket ſets in, and the with his foot preſſes the ſlit together. This way however will not ſucceed but where the ground is bare poor; for if it is rich, or the graſs rank, it may ſm ther or ſtrangle the plant: in that caſe the pits mu be uſed, and, as I have adviſed about other trees, th graſs and weeds muſt be taken away from the roo for at leaſt two years; againſt which time, I thin they will proſper, if cattle get not at them. But believe I have found out a better way for this, and a other trees of two years from the ſeed, which is, a new plantation is deſigned, where the land is ran the ſurface ought to be pared with a paring ſpade, an the turf carried off to be mixed with lime, or ſome ther manure for enriching the corn-land. The groun being thus pared, the plants may be ſet as before d rected. I have uſed this way with ſucceſs; for befo the graſs and weeds can ariſe, the trees are out of da ger from them. Others adviſe the letting firs ſta three years in the ſeed-bed, but I know it is wron having tried it, and they almoſt all died. Some advi removing them to nurſery, a needleſs expence! ſin they thrive better the other way, are eaſily carrie and ſave labour, time and trees.

The diſtance I ſet my firs at is never above five fe when I plant oak, beech, &c. amongſt them; but, wh alone, nearer, in no regular way; for I don't think i valuable tree. They look pretty at a diſtance in thi kets, and in winter, and will thrive in the worſt ſoil, ven in dead ſand.

It is ſurpriſing to ſee how faſt oaks and other valu-
ble trees will grow, when planted under the ſhelter of
s: but I take particular care that the firs do not hurt
eſe trees, by leaning on, or over them; this I pre-
nt by pruning the branches of the firs every winter,
ter the ſap is at reſt by the firſt froſt: but, where both
ey and the other trees thrive well, I cut down the
s to make room for the others. I was once a great
emy to pruning of firs; becauſe what we get from
orway never meet with that treatment; but, ſince it
ould entirely ſpoil the trees amongſt them, if they were
t pruned, I do it; but, where firs ſtand cloſe to-
ther, and no trees mixed with them, I let them
une themſelves, which they do for want of air, and
rubbing upon one another: but, if they muſt be
uned, it is fit to begin only when the branches are
all, that the bark may the ſooner cover the ſcars;
d, as they never ſhoot out on the ſides any more,
is work is to be done but once in one place. What
ropoſe is, after a fir has been ſet out for three years,
begin and cut away the undermoſt ſtories or tiers,
that is the form they grow in, and after that take
e off every year.

*Beſt firs.*

I now gather cones from the firs that
ve the reddeſt wood, eaſy to be known
m their having been pruned; for, let people ſay what
ey pleaſe, as to there being but one kind of Scots
, and that all the difference we ſee in the timber
owing to the age of the tree, or the ſoil it ſtood
, I am convinced it is otherwiſe: for I once cut
wn ſome of, about forty years old, which I thought
ew too near my houſe, and ſtood within a few
rds of one another, ſome of them were red and hard,
ers white and ſpungy, tho' the ſeed was all of one
rcel, ſown in the ſame ſpot, and tranſplanted the
e day.

Authors ſay they ſhould be ſown thin, ſix ſeeds
half a foot ſquare ; but I am never pleaſed if mine co
not up as thick as creſſes. They likewiſe adviſe
moving them from a ſeed-bed to a nurſery ; but, I ho
what I have ſaid will convince you that the way I ta
is much better and cheaper. It is ſaid that they
not grow on a ſandy ſoil, but I can prove, by hundr
of thouſands, that they do on dead ſand, that h
ſcarcely one pile of graſs upon it.

That there are many kinds of firs, I do not de
ſince I do not know if what grows in Norway be
ſame with ours. I am of opinion, that what co
from Sweden differs from the Norway fir ; and
have both the pitch and ſilver fir very unlike our ki
but to be raiſed the ſame way. Joiners diſagree ab
the goodneſs of the timber of the two laſt.

**GREAT PINE.**

I have tried the Great Pine with li
ſucceſs ; whether it was owing to the
mate, or want of skill, I know not ;

**PINASTER.**

the pinaſter, managed like the fir, d
very well.

**EVERGREEN-OAK, and CORK-TREE.**

Of other evergreens that grow lar
there is the evergreen-oak and cork-tr
I have been told, that theſe two tre
managed like the oak, grow large enou
to be fit for ſhip timber ; but whether they
do ſo in this country I cannot hitherto pretend
ſay. I have raiſed a great many of them, but th
are all of them very young ; neither did I ever
a large one but once, and there was a high wall
twixt it and me; but they are much praiſed of l
I have raiſed a great many of them from the ſe
but they are very ill to tranſplant, and the vermin
very fond of the acorn ; and, as I don't think

ol

deſt I have ſeen in this country are pretty even in
nter, I am not fond of them.

I doubt not but the cedar of Lebanon, **CEDAR.**
d we the cones, would proſper as well
this country as the common Scots fir, ſeeing I have
n them in very much expoſed places: For the Ber-
udas cedar, all I ever ſaw of them ſeem to be dwarfs,
d a kind of junipers.

The yew, if not kept down by formal **YEW.**
pping, arrives to great beauty and value;
t it requires many years, beſides care in the ma-
gement, to bring them to a tolerable ſize; and there-
e few care to plant them, ſince, for theſe fifty years
ſt, the clipping, and, I think, the ſpoiling of them,
been in practice. I have now cut all the feathering
my yews, and reduced them to ſingle ſtems; how
y will ſucceed I cannot tell, but I ſhall never try
put any evergreen in any ſhape but its own, unleſs
a hedge.

As to the holly, when it is trained **HOLLY.**
to a tree, it is a very beautiful plant;
is likewiſe ſpoiled by clipping. I have obſerved,
t wherever there is a large yew or holly tree, every
is liberal in their praiſes; but, becauſe clipping
m is ſo much in faſhion, none has courage enough
plant them for trees; though I not only do it, but
e reduced my pyramids, and hope to bring them
their natural ſhapes.

intend to try the training of the cher- **BAYS.**
bay, and the laurel, to trees; and I
e ſome young ones that give me great hopes of
ceſs. There are, beſides, the ſweet-bay, phylera,
alaternus; theſe I intend to raiſe to as great a
ght as I can. I have none of the large box here,
I intend to get ſome. We have the lauruſtinus
arbutus, which are the only buſhes here; and a
larch, which I believe may be worth while to

propagate: I neither like the Swediſh nor comm
juniper, far leſs the Savine. I ſhall now ſpeak
little of

## A WILDERNESS.

As it is only raiſed for ſhade and ornament, an
laid out in what figure the owner pleaſes, there ca
no rule given: They have not been long introdu
into this country, and the way they were firſt laid
was, They firſt pitched on a center with ſtraight vi
from it, terminating in as fine a proſpect as could
had; then were there ſerpentine walks that run t
the whole, hedged like the ſtraight walks, and
angles planted with variety of different trees; tho
now they are weary of the hedges. But people
make it their buſineſs to lay out ground for gentlem
are, in my opinion, very unfit for it, for they are
formal and ſtiff; beſides, they make every thing
buſhy, that they croud the ground too much. W
I to plant a wilderneſs, there ſhould be nothing i
but ever-greens, flowering-ſhrubs, trees that carr
fine bloſſom, and a kind of willow, that hath a b
of a bright yellow. In winter, the ever-greens l
when every thing elſe is bare. I ſhall now conc
all I have to ſay of trees, by adding ſomething

## OF COPPICE.

I have read of many ways of raiſing them: S
adviſe plowing the ground with a good deep furrow
a moſt expeditious way; but then this muſt be fa
about, at leaſt a year before ſowing; for the gro
will require to be fallowed and made fine: But inſ
of ſowing, I would prefer the raiſing the plants in
ſeed-bed for two years, otherwiſe, ſome ſeeds lyin
the ground ſo much longer than others, while

cleaning the plants that are come up, they are dig- g up with the hoe, or treading down theſe that have appeared. Others adviſe a ſtill more expenſive y, that is, to leave four foot of ſolid ground, then dig up four foot next to it, and throw it upon that ich was untouched; this will double the ground and ke the plants grow better; they ſay the falling of leaves will fill up theſe ditches, and the roots run from one bank to another; but, as I never d any of theſe ways, I ſhall not pretend to give a- advice about them. What coppice we have, ſeem e natural. I have always diſapproved of cutting down at a time, ſince, if ſome ſeedling oaks, or r fine trees, were left to ſtand at every felling, they ht come to be great trees, without doing harm to under-wood, ſince the mapple, the ſweet cheſnut, hazel and the ſycamour, will grow under the drop ther trees. I think a coppice, eſpecially thus or- d, a pretty thing; but, as I want experience of , I ſhall not go on writing in the dark. And , having performed what I have promiſed, viz. t you know my method of raiſing and managing , I ſhall next ſay ſomething of fences.

## CHAP. IV.

## Of FENCES.

AVE tried many kinds of fences, but, not ſeeing heſe that were made here ſufficient, nor approving huſbandry of this place, I got a farmer and his from Dorſetſhire, in hopes that he would in- my people in a right way of incloſing, and teach how to manage graſs-ſeeds. The firſt fence he was after this manner: He made a ditch four wide at top, and one at bottom; ſix foot from he made ſuch another: the earth of both he

threw between them; on the ſides of which
planted thorns, and trees on the top; but I found t
cattle ſcrambled up and eat all the plants. I th
made ditches as I had done before; but laid the f
turf on the edge of the ditch, with the green ſide dow
upon this I laid a row of thorns at eighteen inc
diſtance, leaving about an inch and half of the th
lying over the ditch, having cut away the reſt; th
I covered with ſome earth, and laid another turf w
the graſs-ſide outmoſt; then a row of thorns up
it; but, tho' they were eighteen inches diſtant fr
one another, theſe being laid in the intervals, th
was but nine inches betwixt them and the row bel
them. Upon this I laid another turf the ſame w
and a row of thorns, or quicks, juſt above the
dermoſt row, and then threw the earth out of
ditch upon the quicks; and as I did ſo upon the ot
ſide, the reſt lay betwixt the ditches: But I ſo
times left thirty, forty, or fifty feet betwixt the ditc
which I ſtuck full of trees, which I called ſtrips
planting: And, I think, where the fences are ſ
cient, that the trees may be brought up, ſo as it
have a very good effect, by beautifying the coun
warming the ground, and raiſing ſo many more tr
But I did not find the fences good enough, and th
fore tried this method; I drew two lines, nine
from one another, the length of the field; lifted
turf without the lines, laid them edge-ways
the graſs-ſide outmoſt; I raiſed both the b
together, filling in the earth that was pared off
tween them, till I raiſed a ſolid mount of earth
foot high, nine at bottom, drawn in to three an
half at top. On this green bank I ſet hollies upri
and the border they are ſet on being hollowed a li
to keep in the moiſture, tho' they grew ſlow at
are now a ſufficient handſome fence. This was
the fence on the road ſide; but, dividing this field

ſix, I made only half-banks, that is to ſay, they
ere only graſs on the out-ſide, and the earth thrown
was wrought into a border, and the holly-hedge
anted on that: I then made a broad ſtrip of plant-
g, and beyond that, the other fence like the for-
er. But the beſt and moſt ſecure fence I have tried,
cept ſtone and lime walls, which are very expenſive,
the raiſing the banks, as I have ſet down in the
cond place, but without quicks; and when it is
gh enough, fence it up with dry ſtone: But it muſt
obſerved, that this ſtone-wall muſt lean very little
the earth-bank, leſt the weight bring it down: then
t it be pared in the incloſure-ſide, which will make
ſlop to the wall. This earth being the beſt, as it is
e ſurface, ſhould be thrown over the wall, to make
order either for quicks or holly. Theſe are ſome
the ways I have tried, and the laſt is the beſt. As
nes are ill to be had, I am reſolved to follow the
vice of a ſkilful gentleman living near Windſor-foreſt,
whom I wrote, and got the following advice.

" Since you tell me you are endeavouring to make your fences good, and as I am in a country, where, I believe, they are the beſt and ſtrongeſt in England, and made and kept the cheapeſt, I ſhall tell you ſomething of them. You know, that, over moſt of England, they make much uſe of the ſloe, or black thorn, and common bramble: I have long been of opinion, that a mixture of theſe makes much the beſt fences for clipping. The white-thorn-hedge, as in gardens, is an expence that farmers cannot be at, and without that they will grow thin, ſo that the ſheep will get through, and the greater cattle will ſoon follow: beſides, the keeping of them regular with ſheers, is expenſive, and their being kept low doth not warm the ground ſo well as if high. They have ditches, as uſual, and plant the hedges with white-thorn, mixed with mapple,

" crabs, hazel, elder, oak, elm, and aſh ; and t
banks on each ſide, they ram full of black-tho
bramble, and common briar, to keep it cloſe
the root ; and this makes ſo ſtrong a fence, that n
thing can paſs. It is neceſſity makes them ke
their fences ſo ſtrong ; for they cannot uſe pailin
but for a gate, and muſt not diſturb the deer,
once they get within an incloſure, but ſtand wi
their arms acroſs, and ſee a herd of them deſtroy
coppice-wood, or a field of ripe corn, the inclo
ed land being ſtole from the foreſt ; and if th
don't ſubmit, the keepers will bring an action agai
them, which will end in ſhewing a title. I walked
lanes a mile long, with a hedge on each hand, t
foot high, ſo cloſe with brambles, interwoven wi
crabs, white-thorn, mapple, &c. that no bird cou
get through.

" When they cut over, which they do not ſo o
ten, as in countries where their fences are only
gainſt horſes and black cattle, they don't pla
them, which weakens the roots, but cut them
foot and an half above the top of the hedge ; f
what is on the banks they cut cloſe ; then they ſti
in dry thorn-buſhes a-top, to ſtand as high, or hig
er, than the ſtumps of the white-thorn, crabs, &
and hang upon the ſtumps, buſhes which cover
the ſides of the banks ; and the roots of the ſtum
being ſtrong, they throw out ſhoots of half
yard long the firſt year ; the ſtuff upon the ban
runs up upon the dry thorns, which have been la
on them as thick as in a ſeed-bed, and in two yea
a ſtag will ſooner take a brick-wall : The gate
ſuch an incloſure, if not ſtuck full of buſhes,
the weakeſt part of the fence. The black-thorn
the beſt for their uſe ; it is thicker, tougher, a
laſts longer.

" A ſtrong hedge, when cut, yields a great deal money, beſides paying the charges. They make faggots of the thorn, five or ſix foot long; theſe they ſell to overſeers of the high-ways, who lay them at the bottom with ſtones and gravel over them: They are tough and don't yield to the weight of the waggons, and laſt many years without rotting——The large white-thorn, mapple, &c. make good faggots, and the ſmall of all kinds make good bruſh-wood, and fire-wood for the common people, who have no coal but from London.

“ It is not to be believed how thick hedge-row trees are, and once planting does for ever. When they cut their hedges, which they do ſometimes, both for profit and to ſecure their ditches, they prune up all the young trees. The elm here, you know, comes from ſuckers; the aſh, oak, &c. from ſeed, which drops into, and is ſheltered by the hedge, and gets up through it, that one may ſee the fineſt young trees pruned up a man's height above what is on the dike, when a hedge hath been lately cut; and theſe trees ſtand from three to five foot diſtance all along the dike. The elms, and ſometimes the aſhes, that are well grown trees, but not what is called timber, they generally prune very high for the ſake of the burn-wood that is got off, and to give air to the reſt that are lower, of all ſizes. They ſeldom prune up the oak ſo high; becauſe their branches pay well in bark and otherways, when old. In ſhort, in the incloſed parts of this country, it is common to have ſome hundred pounds worth of timber upon an hundred pound eſtate, as they either cut all the timber round an incloſure at once, or pick them out every year; for there is a ſucceſſion riſes, that every year the timber yields as much as the land.

“ They have ſeveral advantages in the thickneſs of their hedge-row trees; it makes the fence much

“ the ſtronger, eſpecially when new cut, for then
“ ſtrengthens the dry hedge, and a ſtag will hardl
“ venture to bruſh through trees within three or fou
“ foot of one another: By this I ſee the miſtake o
“ thinking that the putting ſo many plants in a ban
“ between two ditches, hinders their growth; bein
“ thus covered from the ſun, they keep in the mo
“ ſture, and it is plain, where the bank is thickeſt,
“ very thing grows beſt.

Of the crab apples they make verjuice, and th
“ farmers ſometimes mix them with their appl
“ for cyder; for there is ſcarce one without a litt
“ orchard.

“ The elder berries are of great uſe: The mapp
“ grows faſt under the drop of other trees, is a ſtro
“ hedge, makes good ſtakes or burn-wood, and th
“ bramble mixed with it, grows high on it, and o
“ the hazel and filberd, both which, when cut dow
“ run up preſently, and are thickened by the oth
“ things I have before named. The young trees a
“ left, when the hedges are cut, from four to t
“ foot high above the ſtumps of the hedge, and,
“ about thirty or forty years, the elms are fit f
“ many uſes, particularly for water-pipes. The uſe
“ the aſh at the ſame age is known every wher
“ The oak requires double the time, but anſwers w
“ when timber. I managed my hedges in the ſa
“ manner, and had as much billeting from pruni
“ the hedge-rows, and the pollards, as ſerved m
“ houſe in fire. I kept a rotation, by which I ha
“ and ever might have had, enough in the few fie
“ I reſerved for my own uſe. In ſeven years ſuch
“ hedge may be again cut, but for deer they a
“ longer.

“ I have obſerved very narrowly ſome fields, whe
“ they cut every year timber to a greater value th
“ what the fields yield them; nay, double. I ha

computed upon the hedges round a ſmall field, of four or five acres, let for as many pounds, near a hundred pounds worth of timber, and a ſucceſſion of different ſizes, that, with care, may yield as much more every thirty years; ſo that really a man gets thirty years purchaſe every thirty years, for the timber growing upon his lands, and the yearly rent of his ground to the bargain, without any expence. Some weed them five or ten pounds worth, as they have uſe for money: Some a whole ſide of an incloſure, or two ſides at once: Others cut all the timber-trees in one year.” And now having iven an account of the different kinds of fences I ave made or heard recommended, I ſhall next ſay omething

## Of GRASS-SEEDS,

A very great improvement: for the ground, immeditely after corn, is many years before it ſwards, and any more before it can produce hay, or tolerable aſture. This improvement was new in this country, ill I got the people from Dorſetſhire: I fell heartily o work, tho' the whole country, who are really diſontented at any new thing, were angry with me. hey had a poor opinion of a man's underſtanding, ho would ſow graſs upon land that would carry corn. ut if I ſhould ſow it upon meer out-ground, or hat was poor, they would not blame me; but in at lay their miſtake; for in ſuch land, the crop of raſs is good for nothing; whereas in rich and well anured ground, the graſs is good, and ſoon fitted or corn.

*road lover.* The broad-clover with the red flower hath been long in eſteem; it is ſown in good ground after barley, and harrowed with it: the finer the ground is made for this and all other

*Clover and Rye-graſs.*

other graſs-ſeeds, the better. Twenty pounds of clov is enough for a Scots acre, which is about a fifth larg than in England. I have ſeen this clover thrive well, that, after the barley was cut and carried o the clover was mowed and given green to cattle: t next year, if it was ſeaſonable, it was cut in the e of May, or beginning of June for hay. I ſhall ſ nothing of the making of hay, every day-labour knowing it. After the crop is carried off, no bea ſhould be allowed to touch the field, and the clov will riſe much thicker than it did before: Wh this is in the flower, it may be cut again for ha and, by ſparing it a week or two, will yield good p ſturage till wet weather, and then cattle ſhould taken off, leſt they potch the ground. Indeed I mo commonly keep the ſecond crop for ſeed, which w be ripe in about a month after it is in the flowe the hay of this crop is of no great value, yet bla cattle will eat it. After the graſs is threſhed, the ſe is got clean out of the huſk, and made ready for ſo ing, by putting it a certain way through the mill. Cl ver, if ſown in proper good ground, may yield crop of hay, another for ſeed, and good paſture in year, for two or three years; after that it yields o good crop and paſture. But b cauſe clover ſoon runs out the ground, ſome ſow twel pounds of clover and three buſhels of rye-graſs an acre. This way the ſeed of neither can be ha becauſe the one is much ſooner ripe than the othe and but one crop of hay in a year; but this crop ſo good as to make ſufficient compenſation, and hol for many years; eſpecially, if, inſtead of hay, it ſometimes paſtured upon: Nor will this endanger t horſe, as they ſay the clover doth.

*Rye-graſs alone.*

When rye-graſs is ſown without mi ture along with the barley, four buſhe

oug

ght to be ſown in a Scots acre. If the ground is
good heart as it ought to be, it will proſper ex-
edingly, and the trefoil, or hop-clover, with a yel-
w flower, will come up very thick amongſt it. I
ve often tried to ſow this ſeed by itſelf, but in vain,
though it comes with the rye-graſs.

*Small white clover.*

There is a ſmall clover with a white
wer, that is much in requeſt, and is
ckoned the ſweeteſt feeding of any. It
y be cut when green, and cattle are
y fond of it; but I doubt it will ſcarcely cut for
y without it is mixed with rye-graſs or red-clover.
m told that it is the beſt paſture of any, and that it
much in uſe, and praiſed at preſent.

*St. foin, and lucern.*

I have tried St. foin with very ill ſuc-
s, and the lucern with worſe, but per-
ps it was the fault of the directions I
. The rye-graſs and clover I have
at experience of, and therefore dare recommend
m, and they who at firſt laughed at me are now
lowing my example. Some indeed cry out againſt
ſs-ſeeds, and the rye-graſs in particular; how juſt-
you may judge; for they ſowed it in their worſt
ds, and took it ill that their crops were not as good
mine, who uſed it kindly. They ſay there is no
wing out the roots of the rye-graſs, and of courſe
y can have no corn: I own in ſo bad land they
have nothing; but my corn where my rye-graſs
, was very good: but, if they will fallow and dreſs
r ground, and not take too many crops of corn,
lay it down in good heart with rye-graſs, I ſhall
wer they will give over railing at it,

*Seaſons for ſowing.*

t me for recommending it. The ſea-
for ſowing theſe ſeeds are the ſame
h that of barley; but I have ſown the
d clover in the beginning of March without any
, and it was thrice cut in the flower and eat by
horſes

horſes in the houſe that ſame year; they may likewi be ſown alone in Auguſt or beginning of September.

I ſhall now end this long paper, and, if it can of any uſe to my friends, I ſhall not grudge the troub of it.

HADDINGTON.

*P. S.* In the preceeding treatiſe, I made very free with ſo late authors who have written upon foreſt-trees; but ſince wrote theſe papers, I have ſeen Philip Millar's dictionary, a Mr. Ellis of Goodſeden's book, called the Hereford-ſhire ſ mer; and, as I confeſs, they write like men who underſto what they wrote about trees (except firs, of which they ſe to have had no experience) I thought it neceſſary to do th juſtice. When I wrote about the BIRCH, I promiſed to rect how to manage it, how ſoon I was informed myſelf. of my ſervants pretends to know the way of raiſing it by ſeed: his way is to gather it about the 20th of Septemb when it is full ripe; he then keeps it in a dry cool place the month of February. The way of ſowing, is to dig a pi of ground, ſomewhat moiſt, and when it is well raked and len, ſow it over the ground pretty thick, then chop it down w the back of the ſpade; for it will not bear covering: he th lays on furze-buſhes over it to keep the birds from devour the ſeed; when they have lain till it peeps, take the furze way, and you will ſoon ſee the young plants appear. In ſeed-bed let them ſtand two years, and then put them into nurſery, or ſet them out for good.

I muſt likewiſe add, that, tho' what I have ſaid about the der, and the ill ſucceſs I have had with them, be true; y have ſince ſeen many good and thriving plants of that ki and a gentleman, whoſe opinion I rely upon, has blamed very much for what I ſaid in prejudice of them; and aſſu me they are of great uſe. I own it is a fine tree, and, w rightly managed (which mine were not) may come to anſ very well. This I thought fit to be added, leſt I ſhould blamed for ſpeaking ſlightingly of a tree that may be of lue; and I am not aſhamed to be convinced of an error, to amend it.

210059

*FINIS.*

# THE
# SHEPHERD of BANBURY'S
# RULES
# TO JUDGE OF THE
# CHANGES
# OF THE
# WEATHER,

## Grounded on Forty Years Experience.

To which is added,

Rational ACCOUNT of the Cauſes of ſuch Alterations; the Nature of Wind, Rain, Snow, &c. on the Principles of the *Newtonian* Philoſophy.

By JOHN CLARIDGE.

*EDINBURGH:*
inted for JAMES REID, Bookſeller in LEITH.
M. DCC. LXV.

BRITISH MUSEUM

# NT

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# NTRODUCTION.

AS we very juſtly eſteem it a fit tribute of admira-
tion to adorn natural curioſities, by ſetting them
richly and as advantageouſly as art can direct, ſo
e following obſervations of the ſhepherd of Banbury
ve appeared to me worthy of being preſented to the
e of the public, with all the luſtre that it was in my
wer to give them. It is one thing to obſerve, and
other to reaſon upon obſervations; and it very rare-
happens that both can be taken into the compaſs of
e man's life. We ought therefore to conſider it as
very lucky incident, when the obſervations of ano-
er man, upon whom we can depend, fall into our
nds, and enable us to add natural experience to the
tions derived to us from books of philoſophy.

There is a degree of pedantry in deſarts as well as
lleges. Men who derive their knowledge entirely
om experience, are apt to deſpiſe what they call book-
arning; and men of great reading are as apt to fall
o a leſs excuſable miſtake, that of taking the know-
dge of words for the knowledge of things; whereas
ere are not any two points more oppoſite in nature,
ce we very rarely ſee, that either true ſcholars are
kative, or that talkative men are true ſcholars.

The ſhepherd, whoſe buſineſs it is to obſerve what
s a reference to the flock under his care, who ſpends
his days, and many of his nights, in the open air,
d under the wide-ſpread canopy of heaven, is in a
anner obliged to take particular notice of the altera-
ns of the weather; and when once he comes to take
pleaſure in making ſuch obſervations, it is amazing
w great a progreſs he makes in them, and to how

great a certainty at laſt he arrives, by mere dint of com
paring ſigns and events, and correcting one remark b
another. Every thing in time becomes to him a ſort o
weather-gage. The ſun, the moon, the ſtars, the clouds
the winds, the miſts, the trees, the flowers, the herbs
and almoſt every animal with which he is acquainted
all theſe, I ſay, become to ſuch a perſon inſtruments o
real knowledge.

There are a ſort of half-wiſe people, who, from th
conſideration of the diſtances of things, are apt to trea
ſuch prognoſtications, as they phraſe them, with muc
contempt. They can ſee no connexion between a cat'
waſhing her face, and the ſky's being overſpread wit
clouds; and therefore they boldly pronounce that th
one has no relation to the other. Yet the ſame peo
ple will readily own, that the fluttering of the flam
of a candle is a certain token of wind, which howeve
is not diſcernible by their feeling; becauſe it lies wit
in the compaſs of their underſtanding, to diſcern tha
this fluctuation of the flame is cauſed by the wind actin
upon it; and therefore they are inclined to believe thi
tho' it does not fall actually under the cogniſance
their ſenſes. But a man of a larger compaſs of know
ledge, who is acquainted with the nature and qualiti
of the air, and knows what an effect any alterations i
the weight, the dryneſs, or the humidity of it has upo
all animal bodies, eaſily perceives the reaſon why oth
animals are much ſooner ſenſible of any alterations th
happen in that element than men; and therefore to hi
the cawing of ravens, the chattering of ſwallows, an
a cat's waſhing her face are not ſuperſtitious ſigns, b
natural tokens (like that of the candle's fluttering)
a change of weather; and, as ſuch, they have bee
thought worthy of notice by Ariſtotle, Virgil, Plin
and all the wiſeſt and graveſt writers of antiquity.

But ſtill a few ſlight and trivial obſervations of th
kind, and ſuch as are in the power of every man

ake, go but a very little way in furniſhing us with an
ſeful knowledge of the indications of the weather. To
pply theſe, and to have conſtantly at hand the means
judging of theſe alterations, men of great genius have
vented, (and wonderful inventions they are!) inſtru-
ents for meaſuring the heat, the cold, the weight, the
yneſs, and the humidity of the air, with great exact-
ſs, and upon theſe they reaſon as to the changes of
eather with great accuracy and certainty. It would
doubtedly be a great folly to pretend to queſtion ei-
er the truth of their obſervations, or the uſefulneſs of
em; but then we may have leave to conſider how
r, and to how great a degree they are uſeful. The
ermometer meaſures exactly the degrees of heat; but
e air muſt be hot to ſuch or ſuch a degree, before it
diſcerned by this inſtrument. The barometer indi-
tes the weight of the air; and the riſing and falling
the quick-ſilver expreſſes the alterations in its weight,
th wonderful nicety; but then thoſe alterations are the
uſe of this. In like manner, the hygrometer, or hy-
oſcope, meaſures the dryneſs or humidity of the air
ry plainly and very exactly; but the weather muſt
ter, muſt become dryer or moiſter than it was, before
eſe alterations are viſible; and therefore, however
genious, however curious, however uſeful theſe in-
uments may be in other reſpects, they undoubtedly
ntribute very little to the prognoſticating a change of
eather at a diſtance; and it is from the experience
this, that they are ſo little eſteemed, ſo lightly re-
rded by the common people.

Our ſhepherd's obſervations are of quite another na-
re: moſt of them give us a day's notice, many a
eek's, and ſome extend to ſeveral months prognoſtica-
on of the changes of the weather: and of how great
e theſe may be to all ranks and degrees of people, to
ſedentary valetudinarian, as well as the active tra-

veſſer ; to the ſportſman who purſues his game, as we as to the induſtrious huſbandman, who conſtantly fo lows his labour ; in ſhort, to every man in every ſitu tion, in ſome degree or other, is ſo very clear and i telligible, that it would be a mere waſte of words, a a very idle diſplay of rhetoric, to attempt the makin it clearer. Every man living would be glad to foreſe the alterations of weather if he could ; and conſequen ly to moſt people, if not to all, theſe obſervation grounded on no leſs than forty years experience, ca not but be acceptable.

To make the beſt uſe of one's talent, and to em ploy the lights derived from the ſtation in which pro vidence has placed one, for the benefit of mankin is undoubtedly diſcharging one's duty, anſwering th end of our creation, and correſponding with the œco nomy of nature, which does nothing in vain. This pr poſition is equally true, let a man's ſtation be what will. It is the manner in which we perform, and no the character, that makes the player ; and in this ſen what man is not a player? Here then is an inſtance one, who has for many years ſtudied his part, and no communicates his diſcoveries freely. In a phyſicia in a philoſopher, in a mathematician, this would b highly commendable ; and why not in a ſhepherd? W do not caſt our own parts in the drama of life ; n this is performed by the great Author of nature. He wh adjuſted every thing on earth with ſuch beauty and ha mony ; he who taught the heavenly bodies to mov the ſame diſtributed their ſeveral offices to men. Ma we not therefore ſuppoſe, that every man's part is we caſt, and that our abilities are exactly proportioned t our ſtations? If ſo, he who does all he can, does a that ought to be expected from him, and merits fro impartial judges, the moſt general and juſt applauſe. T be convinced of this, we need only reflect on the na

w and ſelfiſh conduct of ſome, who, either by ſtudy
by chance, have acquired certain valuable ſecrets,
hich, with the utmoſt induſtry, they conceal, in or-
r to be the more admired, or that they may render
em beneficial to themſelves. How contrary the con-
ct of our ſhepherd! his pains were all his own,
t the fruit of them he thus generouſly offers to the
blic. Good ſenſe and the dictates of nature taught
m this maxim, “ That what might benefit *many*,
ſhould not be concealed by *one*, from views of *profit*
or of *pride*.”

In my remarks upon the ſhepherd's rules, I have
metimes endeavoured to ſupport them by authorities,
hich I muſt confeſs would have been of little uſe if
e author had been a perſon of learning; but when
is conſidered, that theſe obſervations were purely
e effect of his own attention and experience, it cer-
inly ſtrengthens them, and adds greatly to their cre-
t, that they have been eſteemed evident ſigns of the
me effects, by the greateſt maſters in this kind of
ence. The art of prognoſticating the weather may
conſidered as a kind of decyphering; and in that
t it is always allowed a point of great conſequence,
hen ſeveral maſters therein agree as to the meaning
a character; and it is from thence very juſtly pre-
med, that this character is rightly decyphered. I have
ſo endeavoured to explain moſt of his obſervations
cording to the rules of the new philoſophy, which,
it is grounded upon experiments, ſo it, generally
eaking, enables us to give a fair and rational account
almoſt all the phænomena taken notice of by the
epherd of Banbury. I likewiſe have added ſome other
les in relation to the weather, taken from the com-
on ſayings of our country people, and from old Eng-
h books of huſbandry; but I have diſtinguiſhed all
ſe from the obſervations themſelves: So that the

reader will have no trouble to diſcern the text fro the commentary, or to know what belongs to th ſhepherd of Banbury, and what to the editor of hi obſervations. This, I think, may ſerve by way of introduction: let us now proceed to the rules themſelves.

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UN. *If*

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# THE
# OUNTRY KALENDAR,
# OR THE
# SHEPHERD of BANBURY's
# OBSERVATIONS.

## I.

UN. *If the Sun riſe red and fiery*--Wind and rain.

THE reaſon of this appearance is, becauſe the Sun ſhines thro' a large maſs of vapours, which occaſions that red colour that has been always eſteemed a ſign of rain; eſpe-
ly if the face of the ſun appear bigger than it ought: then in a few hours the clouds will grow black, be condenſed into rain; ſudden and ſharp if in the
mer, but ſettled and moderate if in winter.

The old Engliſh rule, publiſhed in our firſt alma-
ks, agrees exactly with our author's obſervation:

If red the ſun begins his race,
Be ſure that rain will fall apace.

the reader would ſee this elegantly deſcribed, the
ter of poets hath it thus: *

bove the reſt, the ſun who never lies,
oretels the change of weather in the ſkies;

---

* *Sol* quoque et exoriens, et cum ſe condit in undas,
*Signa* dabit; *Solem* certiſſima ſigna ſequuntur;
Et quæ mare refert, et quæ ſurgentibus *Aſtris*.
Ille ubi naſcentem *maculis* variaverit ortum
Conditus in nubem, medioque refugerit orbe;
Suſpecti tibi ſint *imbres*. Namque urget ab alto
Arboribuſque ſatiſque notus pecorique ſiniſter.
VIRGIL. *Georgic. lib.* I. v. 438.

For if he riſe unwilling to his race,
Clouds on his brow, and ſpots upon his face;
Or if thro' miſts he ſhoots his ſullen beams,
Frugal of light, in looſe and ſtraggling ſtreams,
Suſpect a drizzling day and ſouthern rain,
Fatal to fruits, and flocks, and promis'd grain.

II. *If cloudy, and it ſoon decreaſe*—Certain fair weath

I Conceive the reaſon of this to be, that the vapou being then ſpecifically lighter than the air, are ſt riſing upwards, in which they are aſſiſted by the he of the ſun-beams; agreeable to the notion of Dr. D ham, who obſerves, that after much cloudy weather it always fair before it rains, becauſe the watry vapou are not condenſed till they reach the cold upper re ons; agreeable to the common Engliſh ſaying,

The evening red and morning grey,
Is a ſign of a fair day.

It is alſo an obſervation of Pliny's, in his natur hiſtory: *

" Si ab ortu ſolis repellentur nubes, et ad occaſu
" abibunt, ſerenitatem denunciabunt:" That is,

If at ſun-riſing the clouds are driven away, and r tire as it were to the Weſt, this denotes fair weath

There is an old adage to this purpoſe, which, b cauſe it is ſo very prettily expreſſed, deſerves our n tice, *viz.*

A red evening and a grey morning ſets the pilgri a-walking.

In French thus:

Le rouge ſoir, & blanc matin,
Font rejouir le pelerin.

The Italians ſay the ſame:

Sera roſa, & nigro matino,
Allegra il peregrino.

* Nat. Hiſt. Lib. XVIII. Cap. 35.

I. CLOUDS. *Small and round, like a dapple-grey, with a* North-wind——Fair weather for 2 or 3 days.

THIS is differently expreſſed by other authors. My lord Bacon tells us, that if clouds appear white, d drive to the *N. W.* it is a ſign of ſeveral days fair eather.

Our old Engliſh almanacks have a maxim to this rpoſe :

If woolly fleeces ſpread the heav'nly way,
Be ſure no rain diſturbs the ſummer-day.

And Pliny to the ſame purpoſe*, " Si ſol oriens cingetur orbe, & poſtea totus defluxerit æqualiter, ſerenitatem dabit :" That is, If the riſing ſun be en-ompaſſed with an iris or circle of white clouds, and ey equally fly away, this is a ſign of fair weather.

There is another Engliſh proverb worth remembering ;

In the decay of the moon,
A cloudy morning bodes a fair afternoon.

IV. *Large like rocks*———Great ſhowers.

N the old almanacks, we have this ſign of the weather thus expreſſed,

When clouds appear like rocks and towers,
The earth's refreſhed by frequent ſhowers.

The reaſon of this ſeems to be, that the watry va-ours are then condenſed or condenſing, which gives em this rough and ragged appearance : and as ſoon the thin films that retain the water are broke by this eſſure, theſe heavy clouds deſcend in rain.

Theſe obſervations, as well as ſome that follow, are greeable to all climates, which is the reaſon that they ppear in ſo many different authors, and have been ta-n notice of in ſo many ages. This however does not all diminiſh the credit, or the merit of our ſhepherd's ſervations, who certainly drew them, not from books, t from his own experience, and therefore their

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Ut ſupra,

agreeing ſo well with the rules of other great maſ ought to eſtabliſh his authority: in ſuch caſes as not ſupported by a like concurrence from ancient modern writers, the teſtimony of nature is always ficient evidence.

V. *If ſmall clouds increaſe*——Much rain.

THIS and the following obſervation cannot well underſtood, without giving ſome account of clo in general. The atmoſphere is ſuppoſed to extend ſelf about five miles round this globe of earth, within that ſpace move all kind of vapours, exhaled the ſun's force, or protruded by the ſubterraneous h The aſcending of theſe vapours into the air depends pon many things; and is therefore as different as cauſes: for inſtance, their aſcent depends, in the f place, on the degree of heat with which they are dra up or forced out; *next*, upon the lightneſs of the pours themſelves; *3dly*, on the denſity or rarity of air thro' which they paſs; and, *laſtly*, on the fo and direction of the winds which they encounter their paſſage.

According to the nature of theſe vapours, and circumſtance attending their paſſage, they appear to differently below. For, if they be extremely ſubt they mount very high, and there, according to the timents of Sir Iſaac Newton, form by refraction the zure or blue colour that overſpreads the ſky in rene weather. Clouds, while they remain viſible, not riſe above the height of a mile; and we always ſerve, that the higheſt are of a very light colour, hardly ſeen. If, therefore, ſmall clouds increaſe, ſhews, that the diſpoſition of the air is ſuch, as t theſe clouds cannot riſe therein, either from their o weight, the want of a protruſive force, or from the ling of the wind, which, in cloudy weather, is alw a ſign of rain.

## VI. *If large clouds decreaſe*——Fair weather.

THE ſame kind of reaſoning accounts very clearly for this prognoſtick, ſince it ſhews, that the vapours are either exhaled by the ſun's heat, or are driven off by winds, and ſo reſolved into ſmaller clouds, capable of aſcending higher in the atmoſphere; all which are circumſtances that ſecure us from rain, and afford us a certainty of fair weather.

It is, however, to be obſerved, that large black clouds are frequently, in a ſummer-evening, melted into dews; and this much more frequently happens in the autumn, becauſe the evenings are then cooler, and the vapours more eaſily condenſed for that reaſon. In all obſervations of this ſort, there is a great degree of prudence and good ſenſe required to apply them; and hence it very frequently happens, that ſuch obſervations are condemned as treacherous and abuſive, merely becauſe thoſe who would employ them, want the ſagacity which is requiſite to underſtand them clearly.

## VII. MISTS. *If they riſe in low ground and ſoon vaniſh*——Fair weather.

THIS is a ſure ſign, and very well expreſſed, that is clearly and in few words, which is the excellency of ſuch aphoriſms. In order to be convinced of its good ſenſe and certainty, we muſt conſider a little what Miſts are, whence they riſe, and what becomes of them.

Miſts are, ſtrictly ſpeaking, uncompacted exhalations, which, while they fleet near the earth, are ſtiled Miſts, but when they aſcend into the air, are called Clouds. If, therefore, riſing out of low ground, they are driven along the plain, and are ſoon loſt to the ſight, it muſt ariſe from ſome of theſe cauſes: That there is an air abroad ſufficient to divide and reſolve them, or the heat of the ſun has been ſtrong enough to exhale them, that is, to rarify them ſo as to rende them lighter than the air thro' which they were to paſs. Which ever way this happens, the maxim remains unimpeached.

VIII. *If they riſe to the Hill-tops*---Rain in a day or two

WHEN miſts are very heavy in themſelves, and riſ only by the action of that protruſive force exerte by the ſubterranean fire, they can riſe no higher tha where the gravitation becomes ſuperior to that protruſive force; for then they deſcend again by their own weight: and this occaſions the appearance, mentione in the obſervation, of their hanging upon hill-tops, wher they are very ſoon condenſed, and fall down in rain.

There was formerly a very idle and ill-grounded diſtinction between moiſt and dry exhalations; whereas in truth, all exhalations are moiſt, or, in other words are watry ſteams thrown off by bodies reſpectively dry and the former diſtinction was invented only to ſolv theſe phænomena of which we have been ſpeaking, tha is, the miſt riſing and diſperſing without rain, and th miſt condenſed and reſolved into rain, which, as I hav ſhewn, may be much better explained without any ſuc diſtinction.

IX. *A general miſt before the ſun riſes, near the fu moon.*——Fair weather.

THIS is a general and a very extenſive obſervatio which enables us to judge of the weather for abo a fortnight; and there is very great reaſon to believ that it will very rarely deceive us. In order to co vince the reader of this, it will be neceſſary to explai as far as we are able, the cauſes of this.

Miſts are obſerved to happen when the mercury in barometer is either very low or very high; they ha pen, when it is high, after the region of the air h continued calm a good while, and in the mean time a great abundance of vapours and exhalations have been accumulated, making the air dark by their quantity, and the diſorderly diſpoſition of their parts. They happen, when the mercury is low, ſometimes becauſe the rarity of the air renders it unable to ſuſtain the vapours, which therefore deſcend and fall through it.

But none of theſe caſes agree with the obſervation we are now conſidering; and therefore, to form a true judgment of the weather, we muſt diſtinguiſh between them and the caſe which explains the obſervation.

### X. *If in the new moon*——Rain in the old.

WHEN exhalations riſe copiouſly from the earth, into the region of the air, and the air itſelf is in proper diſpoſition, they aſcend to a great height, and continue a long time before they are condenſed; which accounts very clearly and philoſophically for the interval of fair weather between the riſing of theſe miſts and their falling down again in ſhowers. Their aſcending about ſun-riſe, is a proof that the air is thin, but at the ſame time of a force ſufficient to ſuſtain them; ſince, if the miſts were not ſpecifically lighter than the air itſelf, they could not aſcend.

When the moon is at the full, and ſuch exhalations riſe plentifully, the time neceſſary for them to float in the atmoſphere, before they are condenſed into clouds and rain, extends, generally ſpeaking, beyond the period of that moon; and therefore, the obſervation directs us to expect fair weather.

### XI. *If in the old*——Rain in the new.

BUT as it is obſerved, not only in this climate, but all the world over, that great changes of weather happen near the change of the moon, it follows, that this is the ſeaſon when theſe exhalations that aſcend ſo plentifully at ſun-riſing are condenſed, and conſequentl is the ſeaſon when we ought to expect rain.

If, therefore, the exhalations riſe in the new moo it is a ſign that the air is in a fit diſpoſition to ſuſtai and ſupport them for a conſiderable time, and therefor we have reaſon to expect, that they ſhould continu floating till the next regular change of weather, tha is, till the old of the moon, or rather till towards th change: and therefore, the obſervation is very ca tiouſly and very properly worded, directing us to e pect rain *in* the old, and *in* the new, and not *at* th old or new; becauſe it is obſerved that theſe chang of weather happen not exactly at the change of th moon, but a day or two before or after, of which th reader will meet with many examples in Captain Da pier's hiſtory of winds and ſtorms at ſea.

XII. WINDS. *Obſerve, that in eight years time the is as much South-weſt wind, as North-eaſt; and co ſequently as many wet years as dry.*

THIS muſt be allowed a very extraordinary aph riſm from a country ſhepherd; but at the ſa time it is very agreeable to the obſervations of D Hooke, Dr. Derham, Dr. Grew, and other able nat raliſts, who, with unwearied pains and diligence, ha calculated the quantity of rain falling in one year, a compared it with what fell in another. Lord Baco that honour to our nation, and the age which prod ced him, informs us, that it was an old opinion, the was a total revolution of the weather once in fo years, and wiſhes it was inquired into. I cannot t whether this has ever been done or not, but I thi there is good reaſon to conclude, that there is a nat ral balance eſtabliſhed of wet and dry weather, as light and darkneſs, heat and cold, and other ſuch li variations.

It may not be amiſs to caution the reader againſt a iſtake into which the manner of this rule being ſtated ay eaſily lead him; it is this, that South-weſt winds auſe rain, and North-eaſt winds, fair weather, which owever is not a thing clear or certain by any means. This indeed is true, that South-weſt winds and rain, orth-eaſt winds and fair weather, come together, generally ſpeaking: But the queſtion is, which cauſes the ther: and a more difficult queſtion cannot eaſily be tated, becauſe there ſeems to be facts on both ſides. outh-weſt winds ſeldom continue long without rain; his ſeems to prove the affirmative: but, on the other and, when in hard weather rain begins to fall, the ind commonly veers to the South-weſt; this looks if the rain cauſed the wind.

But, to keep cloſe to the ſhepherd's obſervation. There is one thing ſeems ſtrongly to confirm it, which this, that in any given place, the quantity of rain, ne year with another, is found to be the ſame by experience, according to which the following table has een calculated, for the mean quantity of rain falling ne year with another in thoſe places that are mentiond, and on this proportion the other ſeems to be ounded.

| | | | |
|---|---|---|---|
| At | Harlem | 24 | Inches |
| | Delft | 27 | |
| | Dort | 40 | |
| | Middleburg | 33 | |
| | Paris | 20 | |
| | Lyons | 37 | |
| | Rome | 20 | |
| | Padua | 37½ | |
| | Piſa | 34¼ | |
| | Ulm | 27 | |
| | Berlin | 19½ | |
| In | Lancaſhire | 40 | |
| | Eſſex | 19½ | |

XIII. *When the wind turns to North-eaſt, and it co nues two days without rain, and does not turn Sou on the third day, nor rain the third day, it is lik to continue North-eaſt for eight or nine days,* all fa *and then to come to the South again.*

IN my opinion, this and the ſubſequent remarks pend entirely upon obſervations, and may ſerve ther to found an hypotheſis, than ſeem to be deduc from one. That the variations of the wind depe on certain cauſes, and may conſequently be reduc to rules, is highly probable; and ſuch obſervations theſe render it in a manner certain. But to expl theſe cauſes, and to explain them in ſuch a mann as to account for theſe phænomena in a ſatisfact manner, requires not only great ſagacity, but m experience, and many years obſervation; which, h ever, conſidering the great benefits that would re to mankind from eſtabliſhing ſuch a THEORY, wo be time well beſtowed.

We may, however, eaſily conceive, that a conſt North-eaſt wind muſt be accompanied with fair w ther: for, whatever the cauſes of winds may be, on this ſide the equator, a ſtrong and ſettled No eaſt always buoys up the clouds, and keeps them pended. This has been long obſerved by, and ſes for a ſettled point amongſt ſeamen. The rea of it however cannot be ſo eaſily aſſigned, at lea ſatisfactory reaſon; for, as to ſuppoſitions, every ciful man can furniſh them at pleaſure.

This, as well as the following obſervations, plainly and clearly prove, that, in this part of world, fair weather attends one wind, and wet, ther; but which is the cauſe, and which is the ef or whether both are not the effects of ſome o cauſe, I pretend not abſolutely to determine. Bu aſmuch as it is certainly known, that rains attend other climates, thoſe winds that are here attended fair weather, it ſeems more agreeable to ſuppoſe, that rainy weather is occaſioned chiefly by Weſt-winds, becauſe loaded with moiſt vapours from the ſea.

XIV. *If it turn again out of the South to the North-eaſt with rain, and continues in the North-eaſt two days without rain, and neither turns South nor rains the third day,* it is like to continue North-eaſt for two or three months.

*The wind will finiſh theſe turns in three weeks.*

THIS obſervation is of the ſame nature with the former, and is plainly deduced from long experience. Our author ſeems to contradict himſelf in ſaying, that theſe winds finiſh their turns in three weeks; but his true meaning certainly is, that they are about three weeks in turning from the South to the North-eaſt again. Some very great men have laid it down as a thing certain, that the variations of the wind are to be accounted for by the alteration of the balance of the air, occaſioned by the different effects of heat and cold; but other writers again inſiſt very copiouſly on the effects which winds have upon the air, and thus confound us in a circle of cauſes and effects; whence it is plain, that they do not thoroughly underſtand the ſubject themſelves, and therefore it is no wonder that they are not able to explain it to others.

In ſome parts of the world, and eſpecially between the tropicks, the winds are regular: and therefore our philoſophers ſeem to talk more rationally about them. But, in our Northern countries, the alterations of the wind are ſo frequent, ſudden, and often ſo little agreeable to the ſeaſon, that ſuch general reaſonings will by no means ſerve to explain them. It is however very reaſonable to ſuppoſe, that the ſame general cauſe prevails here as between the tropicks, but with leſs cer-

tainty; becauſe the power of the ſun is not ſo grea
and the determination of the winds depends on the ſ
tuation of mountains, rocks and woods, which dire
the air driving againſt them into certain courſes; ſ
that it is impoſſible to explain, or indeed to judge o
the courſe of the winds, till the country is thoroughl
known, and all thoſe eminences that can affect th
winds are well conſidered.

From theſe reflexions the value of our ſhepherd's o
ſervations will clearly appear. He was not philoſophe
enough to talk in this ſtile, but, by a long and ſtead
attention, he came to know experimentally, what pe
haps few philoſophers, with all their ſagacity, woul
have been able to have found out.

XV. S. W. WINDS. *After a northerly wind for the mo
part two months or more, and then coming South, the
are uſually* three or four fair days at firſt, and th
on the fourth or fifth day comes rain, *or elſe the wi
turns North again,* and continues dry.

THIS is likeways a very judicious and a very uſef
obſervation, and yet it is not a difficult matter
account for it. It is a common obſervation, and
very true one, that there is uſually fair weather b
fore a ſettled courſe of rain. The winds that bri
the dark rainy clouds that obſcure the ſky, and ca
dull cloudy weather, often raiſe theſe vapours to ſu
a height, that they are attracted into the cold regi
above our ſight, till being condenſed there, they f
down upon us again in ſnow or rain, according to o
author's obſervation.

But if, after a ſeeming tendency to rain, there f
low ſeveral days of fine weather, it is a certain in
cation that the temper of the air is altered, and t
theſe vapours had been driven off before they had ti
to condenſe, which is confirmed by the change of t
wind on ſuch occaſions.

All theſe obſervations are to be underſtood in a proper latitude, and not ſtrictly and according to the ve- y letter: For rain may fall the ſixth or ſeventh day, r the wind may change the ſecond or third. Beſides, man who would make uſe of theſe obſervations in he country, muſt conſider attentively the ſituation of he place where he lives, the bearing of the ſea, mar- hes, ponds, lakes, woods, mountains, rocks, &c. For ithout making proper allowances for theſe, all ſuch bſervations on the weather will be apt to fail him.

VI. *If it returns to the South within a day or two without rain, and Northward with rain, and return to the South in one or two days, as before, two or three times together after this ſort,* then it is like to be in the South or South-weſt two or three months together, *as it was in the North before.*

*The winds will finiſh theſe turns in a fortnight.*

THIS may appear a little perplexed to an ordinary reader, but a little attention will make it very clear nd plain; and whoever conſiders what mighty uſes ay be made of the foreſight of weather for a month r two, will not think this labour ill beſtowed. I muſt onfeſs I look upon theſe three rules, in relation to e wind, as the moſt uſeful in the whole collection; ſpecially to farmers and country people, to whom ey are of the greateſt conſequence.

But it is a common thing for ſuch people to ſay, hat certainty is there that theſe rules will prove true? hat probability is there that the wind ſhould conti- ue ſo long in one quarter, and then ſo long in ano- er? How ſhall we be ſatisfied that there is any truth this? Or, if we cannot be ſatisfied as to the truth of , why ſhould we depend upon any ſuch-like obſerva- ons?

To this I anſwer, That they may have reaſonab ſatisfaction given them on this head. Some of o great naturaliſts, who had kept journals of the weath for many years, have found that the ſame wind blo every year very near the ſame number of days, a that there is a regular continuance of different wi annually in every country. For inſtance,

At Utrecht they blow thus,

| | | |
|---|---|---|
| The North wind | . | 42 Days |
| The N. W. | . . | 33 |
| The Weſt | . . | 77 |
| The S. W. | . . . | 58 |
| The South | . . . | 33 |
| The S. E. | . . . | 26 |
| The Eaſt | . . | 53 |
| The N. E. | . . . | 43 |
| | | 365 |

It is a thing plain to every capacity, that a jour or diary of the winds may be kept any where; an from ſuch a journal, it appears, that a given wind bl for a certain number of days, then it follows tha theſe can be determined with certainty, the time of t blowing may alſo be determined, at leaſt with gr probability; which is as ſatisfactory an anſwer as be juſtly expected; becauſe it ſhews that there is a and rational ground for confiding in ſuch obſervatio when confirmed by long experience.

VII. *Fair weather for a week with a ſouthern wind is*
*like to* produce *a* great drought, *if there has been*
*much rain out of the South before. The wind uſually*
*turns from North to South, with a quiet wind without*
*rain, but returns to the North with a ſtrong wind and*
*rain: the ſtrongeſt winds are when it turns from South,*
*to North by Weſt.*

N. B. *When the North wind firſt clears the air, (which*
*ſually once a week) be ſure of* a fair *day or two.*

OBSERVATIONS of this nature upon winds have
employed the ableſt heads in all ages. Pliny, the
at naturaliſt, has left us a great deal upon this ſub-
, which plainly proves, that it has been the opini-
of the ableſt and wiſeſt men, that ſtudy, and expe-
ce might reduce even things of ſuch ſeeming uncer-
ty under ſtated rules, and within the bounds of a
ular ſyſtem: For inſtance he tells us,

In Africa the ſouth wind is ſerene, the north-eaſt
loudy. All the winds have their turns. To judge
tionally of their changes, the fourth day of the
oon is to be regarded.----The ſouth wind blows
ronger than the north-eaſt, becauſe the former riſes
om the bottom, whereas the latter comes from the
rface of the ſea. It is for this reaſon that thoſe
rthquakes are moſt dangerous that follow after a
uth wind."

order to underſtand this notion of Pliny, we need
advert to the account given us by the reverend
Robinſon in his natural hiſtory of Weſtmoreland,
h is exceedingly curious, and well worthy of the
er's peruſal. This ingenious gentleman is of opi-
, that winds have their original from the ſea; of
h he gives the following very probable account:
t," that is, the wind, " proceeds from vaſt ſwarms
nitrous particles ariſing from the bottom of the
, which is put into motion either by the cen-

“ tral fire, or by the heat and fermentation which
“ bounds in this great body of the earth; and the
“ fore the firſt commotion excited by the ſaid ferm
“ tation we call a Bottom-wind, which is preſen
“ diſcovered by porpoiſes and other ſea-fiſh, which
“ light in ſporting and playing upon the waves of
“ ſea, and by their playing give the mariners the f
“ notice of an approaching ſtorm.”

“ When theſe nitrous ſwarms are riſen towards
“ ſurface of the ſea in a dark night, they cauſe ſuc
“ ſhining light upon the waves as if the ſea was
“ fire. And being delivered from the brackiſh wa
“ and received into the open air, thoſe fiery and ſ
“ ing meteors which fix upon the maſts and ſides
“ the ſhips, are only nitrous particles condenſed
“ the circumambient cold, and, like that which
“ chymiſts call Phoſphorus, or artificial glow-wo
“ ſhine and caſt a light, but have no heat: This g
“ the mariners the ſecond notice that the ſtorm i
“ ſing; for, upon the firſt breaking out of the w
“ the ſea begins to be rough, and the waves ſwell
“ riſe, when at the ſame time the air is calm
“ clear.”

“ This boiling fermentation of the ſea cauſes
“ vapours to riſe, which, by the intenſeneſs of the
“ cumabient cold, are condenſed into thick clo
“ and fall down in ſtorms of wind and rain, firſt
“ the ſea from whence they aroſe; and then th
“ tractive power of the mountain-cold, by a ſ
“ magnetiſm between vapour and cold, attracts
“ wateriſh vapours, intermixt with nitrous particl
“ the high tops of mountains and hills, where
“ hang hovering in thick fogs, and wateriſh miſts,
“ til the atmoſpherical heat rarifies the nitrous pa
“ the fog, (which is always uppermoſt, and ap
“ white and tranſlucent) into briſk gales of wind,
“ the intenſeneſs of atmoſpherical cold having at

“ed the vapours into the colder regions of the air, where being condenſed into clouds, the wind breaks, diſſipates and drives them before it, till they fall down in rain, and water the ſurface of the earth. And this ſeems to be the reaſon why in Egypt, and thoſe level countries where they have no mountains, they have little wind, and leſs rain.”

XVIII. **CLOUDS.** *In ſummer or harveſt, when the wind has been South two or three days, and it grows very hot, and you ſee clouds riſe with great white tops like towers, as if one were upon the top of another, and joined together with black on the nether ſide,* there will be thunder and rain ſuddenly.

WE may very eaſily account for this obſervation; becauſe, in fact, the ſigns here mentioned are no other han nature's apparatus for a ſtorm of thunder and ghtning, which will be perfectly underſtood, by at-nding a little to the cauſes of theſe meteors. Light-ing is a great flame, very bright, extending every way a great diſtance, ſuddenly darting upwards, there end-g, ſo that it is only momentaneous. The matter which roduces the fire, is the oil of plants attenuated by e heat of the day, and raiſed on high. Then what-er has exhaled from the earth that is ſulphureous or ly, which is diſperſed up and down the atmoſphere, d is not continuous, is ſet on fire by turns, and the me dilates itſelf as far as the tract of that exhalati- reaches. Some other ſubſtance, pendent and float-g in the air, meets with this alſo, with which it ex-es an effervеſcence, takes fire and flaſhes along with Thunder is another bright flame, riſing on a ſud-n, moving with great violence, and with a very ra-d velocity through the air, according to any deter-ination, upwards from the earth horizontally, oblique- downwards in a right line, or in ſeveral right lines, as it were in ſerpentine tracts joined at various angles, and commonly ending with a loud noiſe or rattling.

It is obſerved, that it thunders moſt when the wind blows from the South, and leaſt when it blows from the Eaſt. The great principle of thunder is ſulphur, as is evident from the ſmell it leaves behind it; but, in order to occaſion ſuch an exploſion, there muſt b other ingredients mixed therewith, eſpecially nitre, o which the air is always full; beſides other things o which it is impoſſible to give any account. The tracts of this ſort of matter fly about in the air, and are as it were lines of gun-powder; and as, in the firing o that powder, the fire begins at one end, and purſuin its aliment proceeds to the other extremity, and ſ the whole maſs of powder is fired, we may from thence account for the phænomenon of thunder. For in like manner, thoſe inflamed tracts which are ſu pended in the air, flaſh from a flame that runs from one extreme to the other, wherever the vein of nou riſhment leads it: Hence thoſe rays of thunder, whic ſeem to be brandiſhed through the air, and ſometime to be ſplit in two or more tracts, and ſometimes to re turn back at other times; to be projected in lines tha are joined by various angles; and this only becauſe th flame meets with tracts lying in various ſituations tha cohere one with another. Therefore thunder ſeem now to run horizontally, now from above down wards, now upwards from the earth; for, if the ma ter of thunder preſſing out of the earth is enflamed ne the ground, the flame darting upwards, the thunder wi ſeem to be projected out of the earth. If the ſam tract be ſet on fire at its upper end, the flame wi move downwards, and the thunder will ſeem to d ſcend out of the ſky.

Hence we eaſily underſtand, how it comes to th der oftner in one place than another; but moſt fr quently in thoſe where the ſoil produces odorifero herbs and abounds with ſulphur, and where the people are much expoſed to the extreme heat of the ſun. Thunder is leſs frequent in places where there are few odoriferous herbs, very little ſulphur, or where the climate is watry and moiſt. For inſtance, it thunders very much in Italy and Sicily, and very rarely in Egypt and the adjacent countries. If it be demanded, how it comes to thunder in the midſt of the ocean? The anſwer is eaſy, Becauſe, from the bottom of the ocean, vaſt tracts of ſulphureous matter are caſt up through the waters; as it happens to ſpring-waters in ſeveral places, the ſtreams of which will take fire from a lighted candle. For ſulphureous exhalations burſting out together with the waters, the fulmineous matter in the air is ſet on fire when it meets with exhalations or vapours, with which it can exhibite a vehement effervеſcence. It is very clear from this account, that the clouds mentioned towards the head of the 17th page, are thunder-clouds, or clouds big with the materials of thunder.

### XIX. *If two ſuch clouds ariſe, one on either hand,* it is time to make haſte to ſhelter.

AS this obſervation is of the ſame nature with the former, we ſhall continue our remarks. The reaſon why it ſeldom thunders in winter is, becauſe the exterior parts of the earth are ſo contracted by the cold, ſnow, and ice, that ſulphur cannot perſpire in any great quantities; but as ſoon as the earth begins to be opened by the ſun in the ſpring, ſomething tranſpires in the month of April which takes fire. But, by the greater heat of the ſun penetrating deeper into the earth, the cortex is more opened in May; and now there is a more copious perſpiration of the fulminating matter, and whatever was collected and ſhut up in winter, is now releaſed and ſnatched up in the air: and thence proceeds the moſt frequent thunders in the month of May, and chiefly, when a very hot day or two has gone before. A leſs quantity of the ſame matter remains in the upper cortex of the earth for the month of June; but, in the mean time, a ſtock ariſes out of the deeper bowels of the earth, which is attenuated and prepared, ſo that, by the very fervent heat of July, it i elevated, as it were in heaps, and ſet on fire. Henc thunder is as frequent in July as in May. And th heat decreaſing in the ſucceeding months, the exhalation of the fulminating matter out of the earth is mor ſparing; and thence alſo the thunder is leſs frequen till, in October and the other winter months, the eart is bound up with us, and hardly perſpires any mor Hence we ſee, why it very ſeldom thunders when th northerly winds blow; for theſe winds conſtringe th earth with their cold, and ſo hinder the fulminatin matter from burſting forth; and when they are bur forth and floating in the air, they hinder their efferve cency. But, on the contrary, when the warm and moi South wind blows, which opens every thing, the ear likeways is opened, and abundance of fulminating ma ter perſpires and aſcends on high, which is there e ſily enflamed.

As the flame runs very ſwiftly, it ſeems to carry long with it particles which it could not ſo eaſily ſet fire; and when any of theſe particles are drawn tog ther, and heated to a certain degree, they at laſt ta fire with a ſudden and great exploſion, and thereby pr duce what we call a thunder-clap. Now tho' this only a ſingle ſound, yet it is often heard in the fo of a great murmuring noiſe of a long continuanc ſometimes for thirty or forty ſeconds, becauſe of various repercuſſions by the clouds and terreſtrial ſtacles. Hence it is, that in vales which are ſurrou ed by mountains of a different height, there is a t rible and long continued bellowing of thunder-clap whereas, for one exploſion, it has been obſerved, that there is but one clap: Yet however, if the flame ſet fire to two, three, or more fulmineous tracts, each of them at laſt will end in a clap, and thus ſeveral ſounds may be heard together, or quickly ſucceeding one another.

XX. *If you ſee a cloud riſe againſt the wind, or ſide wind, when that cloud comes up to you, the wind will blow the ſame way that the cloud came. And the ſame rule holds of a clear place, when all the ſky is equally thick, except one clear edge.*

THIS ſeems to ariſe from hence, that wind being nothing more than air in motion, the effects of it firſt diſcover themſelves above, and actually drive ſuch clouds before them. This was long ago obſerved by Pliny: When clouds, ſays he, float about in a ſerene ſky, from whatever quarter they come you may expect winds. If they are collected together in one place, they will be diſperſed by the approach of the ſun. If theſe clouds come from the North-eaſt they denote winds; if from the South, great rains. But let them come from what quarter they will, if you ſee them driving thus about ſun-ſet, they are ſure ſigns of an approaching tempeſt.

If the clouds look duſky, or of a tarniſhed ſilver colour, and move very ſlowly, it is a ſign of hail. But, to ſpeak more plainly, thoſe very clouds are laden with hail, which, if there be a mixture of blue in the clouds, will be ſmall; but if very yellow, large. Small ſcattering clouds that fly very high, eſpecially from the South-weſt, denote whirl-winds. The ſhooting of fallen ſtars through them is a ſign of thunder. We meet with many obſervations of this ſort in our old writers on huſbandry; and we have abundance of proverbs relating to this ſubject, which are worth obſerving; and the rather becauſe the moſt of them are no peculiar to our language only, but common to us wit many of our neighbours. It is the remark of Lord Bacon, and a very judicious remark too, that proverb are the philoſophy of the common people, that is t ſay, they are trite remarks founded in truth, and fitte for memory. I muſt confeſs that there are ſome o them that ſeem either falſe, or of no great conſequence; but then I am apt to ſuſpect, that, by various accidents, we have loſt their true meaning, or elſ that, in length of time, they have been altered an corrupted, till they have little or no meaning at al

I cannot help taking notice, in regard to the rul before us, of what captain Dampier tells us, that in th Eaſt Indies they have always notice of a tuffoon, by th ſkies being firſt clear and calm, and then a ſmall whit cloud hanging preciſely in the point from whence th ſtorm comes, where he obſerves, that it remains ſometimes twelve hours or more; and adds, that as ſoo as it begins to move, the wind preſently follows i When Sir John Bury, who died an Engliſh admira had the command of a ſmall frigate in the Weſt Indies, he eſcaped a hurricane in the Leeward iſland by taking the advice of a poor negro, who ſhewed hi a ſmall white cloud at a diſtance, and aſſured him, tha when it came to the Zenith, the hurricane would infallibly begin, as indeed it did.

XXI. *Sudden rains never* laſt long: *But when the ai grows thick by degrees, and the ſun, moon and ſtar ſhine dimmer and dimmer, then it is like* to rain ſi hours uſually.

RAIN is, properly ſpeaking, a multitude of ſmal watry drops, falling from the upper air at different ſeaſons. When the upper regions become cold o a ſudden, the watry clouds are condenſed and fall i haſty ſhowers. It is obſerved, that mountainous coun tries have moſt rain; and the reaſon ſeems to be the winds driving the clouds againſt the rocks and hills, and thereby compreſſing them in ſuch a manner, that they are immediately diſſolved, and fall, as it were, at once. This is the reaſon, that in Lancaſhire there falls twice as much rain as in Eſſex; and it is probably from he ſame cauſe, that, in the ocean, over againſt the nountainous coaſt of Guiney, ſhowers ſometimes fall s it were by pail-fulls.

This obſervation of our ſhepherd is very juſt and eaſonable, and I dare ſay will hardly ever fail ſuch as bſerve it. The dimneſs of the ſtars and other heaveny bodies, is one of the ſureſt ſigns of very rainy weaher. It is likewiſe to be obſerved, that when the ſtars ook bigger than uſual, and are pale and dull, and withut rays, this undoubtedly indicates, that the clouds re condenſing into rain, which will very ſoon fall; and has been obſerved, that when the air grows thick by egrees, and the light of the ſun leſſens ſo as not to be iſcerned at all, and again when the moon or ſtars have e ſame appearances, a continued rain for at leaſt ſix ours is ſure to follow.

To be the better informed in ſuch caſes, it is beſt to ave recourſe to a variety of ſigns; for it is not only e clouds and ſky, or the ſun, moon and ſtars, that ive us previous notice of rainy weather, but almoſt very thing in the creation, and vegetables particular: As for inſtance, the Pimpernel, which is a very ommon flower, ſhuts itſelf up extremely cloſe againſt iny weather. In like manner, the Trefoil ſwells in e ſtalk againſt rain, ſo that it ſtands up very ſtiff, but e leaves droop and hang down. Even the moſt ſolid dies are affected by this change of the atmoſphere; r ſtones ſeem to ſweat, and wood ſwells, the air iving the moiſt particles, with which it is filled, in the pores of dry wood eſpecially, making it ſwell

prodigiouſly ; and this is the reaſon the doors and wi
dows are hard to ſhut in rainy weather.

This is ſo true, that there has been a method foun
of dividing mill-ſtones by the mere force of the ai
which is done in this manner. They divide a block
this kind of ſtone, as big as a large rolling-ſtone, int
as many parts as they deſign to make mill-ſtones, an
in the circles where this block is to be divided, the
pierce ſeveral holes, which they fill with Sallow-woo
dried in an oven, and expoſe the ſtone to the air i
moiſt weather, when the wood ſwells to ſuch a degr
as to ſplit the ſtone as effectually as if it was done b
iron wedges driven by Sledge-hammers. This curio
and extraordinary method of dividing mill-ſtones is r
lated by the famous Mr. Ozanam, of his own kno
ledge.

XXII. *If it begin to rain from the South, with a hi*
*wind for two or three hours, and the wind falls, b*
*the rain continues,* it is like to rain twelve hours
more ; and does uſually rain till a ſtrong North-wi
clears the air. *Theſe long rains ſeldom hold abo*
*twelve hours, or happen above* once a year.

THIS depends entirely upon obſervation ; and ex
rience ſhews us, that whenever the wind falls, ra
follows. It has been likewiſe obſerved, that when t
wind changes often, there fall heavy rains. All th
alterations in the atmoſphere are leſs obſerved by m
than by animals, for two reaſons. The firſt is, t
we live much within doors, by which they are leſs
vious to us ; and it is for this reaſon, that the huſba
men, ſeamen, fiſhermen, but above all, ſhepherds, w
are more in the open air than other men, are bet
acquainted with, and more able to diſtinguiſh a
judge of the ſigns of the alterations of the weat
than thoſe who live altogether within doors, or go

ut ſeldom. Another reaſon is, our having ſo many hings to mind, which takes off our thoughts, and renders us leſs attentive to the ſignals which would give us notice of ſuch alterations. It is for this reaſon that ve ought to ſerve ourſelves of that ſort of inſtinct which ature has given to other animals, and which, as it is gift of nature, is in a manner infallible.

Thus, if ſmall birds prune themſelves, and duck, nd make a ſhew of waſhing; if crows make a great oiſe in the evening; if geeſe gaggle more than uſual, heſe are all ſigns of rain; becauſe theſe animals love vet weather, and rejoice at the approach of it. On the ther hand, if oxen lie on their right ſides, look towards he ſouth, and lick their hoofs; if cows look up in the ir, and ſnuff it; if aſſes bray violently; and if cocks row at unuſual hours, but eſpecially when a hen and hickens croud into the houſe, theſe are ſure ſigns of ain.

Inſects alſo are very ſenſible of ſuch changes of wea-her: Frogs croak more than ordinary, worms creep ut of the ground, moles throw up more earth than ſual, becauſe ſuch weather is more agreeable to them. Hornets, waſps and gnats, ſting more frequently againſt vet weather than in fair. Spiders are reſtleſs and un-aſy, and frequently drop from the wall, the humid ir getting into their webs and making them heavy. ut the ſureſt and moſt certain ſign is taken from bees, hich are more incommoded by rain than almoſt any ther creatures; and therefore, as ſoon as the air be-ins to grow heavy, and the vapours to condenſe, they ill not fly from their hives, but either remain in them ll day, or elſe fly but to a ſmall diſtance.

XXIII. *If it begins to rain an hour or two before ſun-riſin it is like to be* fair before noon, and ſo continue th day; *but if the rain begin an hour or two after ſu riſing, it is like* to rain all that day, *except the rai bow be ſeen before it rains.*

THIS is a ſhort, clear and eaſy obſervation, an therefore I ſhall not dwell long upon it, but ra ther entertain the reader with a few obſervations o the rain-bow. Whenever it appears, things are thus ci cumſtanced: The Spectator has the ſun behind hi and clouds with the bow in them before him. Som times there are two and even three bows ſeen, b this is very rare. The colours in the bow are rang in this order, *viz.* violet, purple, blue, green, yello orange, red. After a long drought, the bow is a ce tain ſign of rain; after much wet, of fair weather. the green be large and bright, it is a ſign of rain; b if the red be the ſtrongeſt colour, then it denotes wi and rain together. If the bow breaks up all at onc there will follow ſerene and ſettled weather. If t bow be ſeen in the morning, ſmall rain will follow; at noon, ſettled and heavy rains; if at night, fair we ther. The appearance of two or three rain-bows ſhe fair weather for the preſent, but ſettled and heavy rai in two or three days time.

Lunar rain-bows are ſometimes, but very ſeld ſeen; they are extremely beautiful, but much leſs th thoſe that appear in the day-time, and a yellow, or ther a ſtraw-colour, prevails moſt. As they happen ſeldom, they cannot well be reckoned amongſt ſigns of weather. But now, after ſpeaking of ſo n ny different methods of judging when rainy weat will be of a ſhort or long continuance, give me lea to deſcribe two or three inſtruments, eaſily made, whi will ſhew the alterations of the weather certainly, c ſtantly, and early enough for moſt uſes.

There were, ſome years ago, a ſort of toys ſold,
ith a man and a woman ſo fixt before the door of a
ouſe, that, at the approach of wet weather, the wo-
an entered it, and when the weather grew fair the
an: This was done by the help of a bit of cat-gut,
hich ſhrinks in wet weather, and ſtretches again when
is fair. This appears better by a line and plummet;
pecially if the line be made of good whip-cord, that
well dried; for then if it be hung againſt a wainſcot,
d a line drawn under it exactly where the plummet
aches, in very moderate weather, it will be found
riſe above it before rain, and to ſink below when the
ather is like to become fair. But the beſt inſtru-
nt of all is a good pair of ſcales, in one of which
there be a braſs weight of a pound, and in the o-
r a pound of ſalt, or of ſaltpetre well dried, a ſtand
ng placed under the ſcale, ſo as to hinder its falling
low; when it is inclined to rain, the ſalt will ſwell
ſink the ſcale; when the weather is growing fair,
braſs weight will regain its aſcendancy.

IV. SPRING and SUMMER. *If the laſt eighteen*
*ays of* February, *and ten days of* March, *be for the*
*oſt part rainy, then the* ſpring *and* ſummer *quarters*
*re like to be ſo too: And I never knew* a great drought,
*ut it entered* in that ſeaſon.

is eaſy to diſcover by obſervation whether this rule
be well or ill founded, that is to ſay, whether our
pherd's obſervation will ſerve for other places or
, and where it will ſerve and where not. But it
not be amiſs to remark, that it is highly probable,
ather abſolutely certain, that the weather in one ſea-
of the year determines the weather in another: For
ance, if there be a rainy winter, then the autumn
be dry; if a dry ſpring, then a rainy winter. Our
fathers had abundance of odd ſayings upon this
ect, and ſome proverbs for every month in the

year; but I doubt they were indifferently founded however, there can be no harm in obſerving them, i order to diſcover whether there be any thing in the or not.

Janiver freeze the pot by the fire.
If the graſs grow in Janiveer,
It grows the worſe for't all the year.
The Welchman had rather ſee his dam on the Be
Than to ſee a fair Februeer.
March wind and May ſun
Makes clothes white and maids dun.
When April blows his horn,
'Tis good both for hay and corn.
An April flood
Carries away the frog and her brood.
A cold May and a windy
Makes a full barn and a fendy.
A May flood never did good.
A ſwarm of bees in May
Is worth a load of hay:
But a ſwarm in July
Is not worth a fly, &c.

XXV. WINTER. *If the latter end of* October *and ginning of* November *be for the moſt part warm rainy, then* January *and* February are like to be fro and cold, *except after a very dry ſummer.*

IT is very evident, ſuppoſing this obſervation to true, as I am pretty confident it is, that the reaſon it is to be ſought in that balance of the weather wh providence has eſtabliſhed. There is not only a ti to ſow, and a time to reap, but there is a time alſo dry, and a time for wet weather; and if theſe do happen at proper ſeaſons, they will certainly hap at other ſeaſons: for not only the wiſdom of phil phers hath diſcerned, but their experiments and ob

vations hath put it out of doubt, that there is a cer-
tain rule or proportion obſerved between wet weather
and dry in every country; ſo that it is nearly the ſame
in every annual revolution; neither is it wet and dry
weather only, but hot and cold, open and froſt, that
are thus regulated; from whence we ſee, that when
the ſcripture repreſents to us God's ſettling things by
weight and meaſure, it ſpeaks not only elegantly, but
xactly. For we do not mean by providence any ex-
raordinary or ſupernatural interpoſition of almighty
ower, but the conſtant and ſettled order eſtabliſhed
y the will of that almighty being, which we common-
y call Nature.

There is nothing eaſier than for vulgar underſtand-
gs to miſtake the meaning of words, and, by a ſuper-
ition natural to weak minds, convert what they im-
erfectly underſtand into notions that perplex and con-
und them. Hence it proceeds, that, in common con-
erſation, one hears people ſpeak of nature as of a be-
g, or a kind of ſubordinate deity; whereas, in rea-
y, the true meaning of nature is, that order or law
hich God has eſtabliſhed in the univerſe; and the
owledge of nature is no more than the light we ac-
ire by ſtudy into the connexion of thoſe laws. In
is ſenſe, experience is a kind of revelation, that is to
y, it is a ſort of knowledge that comes to us from
thout, and is infallible in itſelf. We may indeed
on wrong, and deceive ourſelves in the arguments
raiſe from it; but the knowledge grounded upon
periments never varies.

This is ſufficient to ſhew us, how much wiſer a thing
s to truſt this ſort of experimental knowledge, than
put any faith in that kind of idle ſcience which a-
ſed our forefathers, and enabled almanack-makers
delude and miſlead them. It is true, we uſe the
inaries as well as they, but then we uſe them in a
onal manner, and do not pretend to impoſe this or

that ſign upon other people, but barely ſet down ou own obſervations, which are to be examined and verifie by the experience of thoſe to whom they are ſubmi ted. The aſtrologer, on the other hand, inſiſts o what are not in nature; the twelve houſes are a me invention, and ſo are all the properties aſcribed to th celeſtial ſigns, and to the planets; mere dreams an fictions deviſed by the cunning to cheat and impo upon the ignorant, and which had been long ago e ploded, if people had brought them to the only teſt which they are capable, I mean that of experience with which they never did, never will, and inde never can agree; whereas the rules given by our ſhe herd are ſuch as, we have ſhewn, ſuit perfectly we with the remarks of other ſtudious perſons in all age

XXVI. *If* October *and* November *be ſnow and fro then* January *and* February *are like to be* open *a* mild.

AS this obſervation ſtands on the ſame foundati with the laſt, we need not dwell upon it partic larly: and therefore, I ſhall proceed with my form reflexions. The only way to be acquainted with n ture, is to ſtudy nature. All ſyſtems of human inve tion, that are not built upon experiments, are ſoon or later found to be falſe, becauſe, to ſay the tru they are nothing better than ingenious contrivances i vented by the wit of man, to conceal his ignorance. order to account for what we behold, we muſt firſt all take pains to be well acquainted with the fact, a not ſuffer ourſelves to be led away by opinion. In der to explain what I mean, I ſhall give an inſtan All the world knows, that not only the vulgar, the learned, were for many ages in a conſtant erro bout corruption, and really believed, that the heat the ſun, and even animal heat produced worms, m gots, and other living creatures. Many grave writ carried the thing farther, and told us of rats, mice a other creatures, produced out of the ſlime of the river Nile, by the heat of the ſun in Egypt, which might very well paſs for truth among thoſe who fancied they ſaw every day ſomething of the like nature: I mean in the corruption of fleſh and other things, in which we behold thouſands of living creatures.

An Italian philoſopher deſtroyed this whole doctrine t once, by a ſimple and eaſy experiment. He expo- ed a piece of raw fleſh in a glaſs-veſſel, well covered ith gawz, to the air and ſun, and found that it putri- ed, without producing any living creatures. This ews how careful we ought to be with reſpect to acts; for, till this experiment was made, no body oubted that vermin were bred by, as well as in, putri- d bodies; whereas we are now ſatisfied, that the heat f the ſun can no more produce a worm or a maggot, an a horſe or an elephant. By the ſame examination e might open the way to knowledge, by driving out multitude of other errors: But the humour of taking ings for granted, without enquiring into them, and en endeavouring to account for them by dint of rea- ning, amuſes us with a falſe ſhew of wiſdom, and courages us to perſiſt obſtinately in the maintenance weak and fooliſh notions.

To apply this to the ſubject of which we are treat- g, it is certainly a curious and an uſeful thing to un- rſtand the nature of the weather, and to know how e changes that happen in it come to paſs. The buſineſs to find out the true way of coming at this kind of owledge; and upon the principles that I have advan- d, it is very evident, that the only certain way of ming at it, is by obſervation. This is a ſlow, but ure method of arriving at truth, and the ſpecimen re given us of one man's obſervations, is enough to nvince us, that a little diligence and application uld ſoon go a great way towards forming a body

of ſuch obſervations, as might enable us to underſtan
the weather thoroughly, and to predict its changes an
alterations with a great degree of certainty. If w
will not take this pains, we muſt content ourſelve
with what hath been already diſcovered; or if our con
ditions of life exclude us from the opportunities of ma
king ſuch obſervations, it is certainly a right thing t
help ourſelves by enquiring into, and reaſoning upo
ſuch obſervations as other people have made; and t
facilitate this as far as poſſible, I have taken the pain
to write this commentary upon our ſhepherd's rule
which, I hope, will render them more uſeful, or, a
leaſt, ſecure them that regard which they deſerve.

There remains therefore nothing more for me t
do, in order to recommend theſe obſervations, but t
ſay ſomewhat with reſpect to the utility of the alter
tions of the weather in general, and in particular. I
order to ſatisfy the reader, that there is nothing
chance or accident in ſuch alterations, but that th
are governed in every reſpect by the ſame unerring wi
dom, that at firſt framed, and conſtantly preſerves t
univerſe: all weathers are at ſometimes ſeaſonab
which ſhews that they are good in themſelves, and o
ly accidentally evil. We ought not to meaſure things
a general nature by particular rules. If, by the directi
of providence, the ſucceſſion of ſeaſons be ſuch, as th
they turn to the good of mankind in the whole; it
no objection to, or diminution of providence, that t
ſucceſſion of ſeaſons ſhould at different times be in
rious to certain countries, becauſe this may likew
be accounted for.

As to particulars, we will begin with the air whi
is compoſed of exhalations of all earthly bodies,
well ſolid as fluid; as alſo of fire, whether of the
or the ſtars, or of earthly bodies burnt, or of fire bre
ing out from the entrails of the earth, and aſcendin
and tho' it be thus compounded, and hath ſwiming

it multitudes of other things, yet we find that it is perfectly wholeſome, is the ſpring of motion and of life to men, and all other animals: ſo that tho' we cannot account for, and perhaps have not a power of comprehending, how ſuch a mixed body can be rendered ſalutary; yet ſince it is certain that ſo it is, we have no right to complain either of the evil conſequences that ſometimes attend the exhalations with which it is filled, or the accidents that flow from the frequent alterations that happen therein; becauſe theſe have a viſible tendency to the general good, and are apparently neceſſary to the preſervation of the univerſe; ſo that efore we can have any title to find fault, we muſt firſt hew that we are capable of underſtanding them in heir full extent, and as *this* is impoſſible, it follows *hat* muſt be unreaſonable.

But this appears ſtill the more clearly, when it is onſidered, that all ſuch alterations may be ſhewn, even rom the light of reaſon, to be generally uſeful, notithſtanding they ſometimes appear troubleſome and oxious: For inſtance, ſuch quick ſtreams of air in otion as we call winds, though they ſometimes ſwell nto ſtorms and tempeſts, yet are they of great benefit mankind, by purging the air, and many other conveniencies. It is a proverb at Vienna, "that if Auſtria be not windy, it is ſickly," and this ſaying is no leſs ue in other countries; for, by conſulting the hiſtory of the laſt great plague that raged here in 1666, will be found that there was in a manner a dead calm uring the time of the ſickneſs; and it is known in gypt, where they have plagues annually, that the ange of the wind delivers them from that evil. Add this the great uſe of winds in navigation, and reflect on the benefits that accrue therefrom, and we ſhall e no cauſe whatever to doubt, that this motion of the r is a very wiſe contrivance.

The condenſation of vapours, which is the cauſe o rain, is another great benefit to the world, in as muc as this is very probably ſuppoſed to be the ſource fountains, rivers, lakes, and other magazines of fre water, without which the earth would be uninhabitabl and to which, in a very great meaſure, its fertility is owing. We ought likeways to remember, that tho' this be i itſelf ſo clear, and, at the ſame time, ſo certain, y there are countries in the world where it very ſeldo rains, as in Egypt, and others where it hardly ev rains, as in Peru; ſo that we ſee there is no raiſing g neral doctrines upon this ſubject, which ought to mak us the more tender in diſputing the will of providenc or repining when it happens to croſs our own.

The uſes of ſnow are as great, tho' leſs apparen of which I ſhall mention but three, The *firſt* is, I preſerving herbs and graſs in the winter againſt the verity of froſt; *ſecondly*, Its ſupplying water to broo and rivers; and, *laſtly*, Its furniſhing the earth wi vaſt quantities of nitre, and thereby conducing great to its fertility; and perhaps the ſame thing may ſaid of froſt, hard winters being often ſucceeded luxuriant ſummers; and thus we find, that what, appearance, cauſes ſcarcity, may, in reality, produ plenty.

*Laſtly*, Even thunder, however terrible in its a pearance, and ſometimes fatal in its effects, is neverth leſs very uſeful and beneficial upon the whole; for th likeways purifies the air from ſulphureous and oily halations, and the rains that fall with it fertilize t earth exceedingly: it alſo moderates the heat, as perience teaches us; for, as it is always gloomy a ſultry before thunder, ſo it is afterwards generally c and pleaſant. Theſe remarks, tho' very ſhort, m give the reader an opportunity of extending his obſ vations throughout all the variations of weather, a enable him to diſcern how uſeful and inſtructive a th

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the ſtudy of its alterations may be, and how probable it is, that, by proper care and attention, we may arrive at a much more uſeful, as well as a much more certain knowledge in regard to the weather, than hitherto has been attained.

I ſhall conclude, by recommending to the reader's peruſal a very curious and entertaining letter, tho' written in a plain familiar ſtile, which will ſerve to exerciſe his thoughts, by affording him an opportunity of endeavouring to account, upon the principles before laid down, for the ſurpriſing varieties in that climate, which has been hitherto reputed the moſt irregular, and the moſt unwholſome in the world.

## To Mr. W. D.

SIR,

I HAVE been very ill ſince my return home with the gout, ſo that I have not been capable of anſwering your expectation; but being a little better recovered, I ſhall make as good a return to your enquiry of the Harmatans on the coaſt of Guinea, as my circumſtances will permit. Their uſual time of blowing is between the latter part of December, and the beginning of February, before and beyond which ſeaſons they never exceed. They are of ſo very cold, ſharp, and piercing a nature, that the ſeams of the floors of our chambers, and the ſides and decks of our ſhips (as far as they are above water) will open ſo wide, as that, with facility, you may put a chalking-iron a conſiderable way into them; in which condition they continue ſo long as the Harmatan blows, which is ſometimes two or three, and very rarely five days, which is the very utmoſt I ever obſerved or heard of; and when they are gone they cloſe again, and are as tight as if it had never been. The natives themſelves, and all perſons that inhabit thoſe parts (during that ſhort ſeaſon) to prevent their pernicious effects, are obliged to confine themſelves within doors, where they endeavour their own ſecurity, by rendering their habitations as cloſe and impenetrable as poſſible: neither will they once ſtir abroad, unleſs induced thereto by a more than ordinary occaſion. It is as deſtructive to the cattle alſo, whoſe ſafeguard conſiſts in their proprietors care, who, againſt this ſeaſon, ought to provide ſome ſuch like place for them, otherways they muſt expect but a pitiful account when the ſeaſon is over; for it moſt certainly deſtroys them, and that in a very ſhort time.

This I accidentally experienced, by expoſing a couple of goats to the aſperity thereof, which, in four hours ſpace, or thereabouts, were deprived of life: Nay, we ourſelves (unleſs aſſiſted by the like conveniency and the benefit of ſome ſweet oils to correct the air) cannot fetch our breath ſo freely as at other times, but are almoſt ſuffocated with too frequent and acid reſpirations. They generally blow between the Eaſt and Eaſt North-eaſt, to the Northward of which they never exceed, being the moſt ſettled and ſteady, but freſh gales, I ever obſerved; coming without thunder, lightning, or rain, but cloſe gloomy weather, the ſun not ſhining all the time: And when they expire, the trade wind (which conſtantly blows on that coaſt at Weſt South-weſt and South-weſt) returns with the accuſtomary ſeaſonableneſs of weather.

The coaſt of Africa, from Cape Palmas to Cape Formoſa, lies Eaſt and Eaſt by North, and near thoſe points the land-breezes blow on that coaſt, which commonly begin about ſeven in the evening, and continue all night till near that time the next morning, during which interval, we are troubled with ſtinking fogs and miſts off ſhore, which, by the return of the ſea-breezes upon the oppoſite points, are all driven away, and we have the benefit of them in a curious freſh gale till about five in the afternoon.

And here let me note it for a general obſervation, that in thoſe and all other places within the tropics, (as far as ever I took notice) the wind is drawn by the land; for, if an iſland or head-land were inclining to a circular form, the ſea and land breezes fall in diametrically oppoſite to that part where you are: So that, if you are on the South-ſide, the ſea-breeze ſhall be at South, and the land-breeze, (when it comes in its ſeaſon) at North.

In getting on the coaſt, we endeavour to fall in with Cape Mount or Cape Miſerada, which is about eighteen leagues to the Eaſt South-Eaſtward thereof, and after that we double Cape Palmas, (whence, as aforeſaid, the land trends away Eaſt by North) the current near the ſhore ſets upon that point down into the bite. But in getting off, we attempt, as much as poſſible, to ay hold of St. Thomas, and thence to run to the Southward of the line, perhaps three or four degrees; for the further to the South we go, the ſtronger we find the gales, and more beneficial for getting off the African coaſt, but thoſe who keep to the Northward hereof, generally meet with more calms, and conſequently longer voyages enſue. In or about thoſe latiudes we continue, till we are got between twenty-five nd thirty degrees to the Weſtward of Cape Lopez de Gonſalvo, and then we croſs again to go either for England or the Weſt-Indies. But, by the way, let me obſerve to you, that when once we are to the Weſtward of the Cape, and in South latitude, the current ets Northerly, and the wind, to twenty degrees of laitude, is at Eaſt South-eaſt, as (to the like number f degrees) on the North-ſide of the line it blows at Eaſt North-eaſt; neither did I ever obſerve any mutation of he currents, unleſs in the Tornado-ſeaſon, when, durg their blowing, they commonly ſet to windward, hough perhaps the moon, upon full and change, may have the like influence there as in other places; but I never took any particular notice thereof.

The ſaid Tornadoes uſually come in the beginnin of April, and ſeldom relinquiſh the gold-coaſt till July commences, and, with frequent viſits, make us ſenſibl of their qualities. We have ſometimes three or fou in a day; but then their continuance is but ſhort, perhaps not above two hours, and the ſtrength or fury o it may be about a quarter or half an hour, but accompanied with prodigious thunder, lightning and rain and the violence of the wind ſo extraordinary, as tha it has ſometimes rolled up the lead wherewith th houſes are covered, as cloſe and compactly as it poſſibly could be done by the art of man. The name implies a variety of winds; but the ſtrength of them i generally at South-eaſt, and, by ſhips that are boun off the coaſt, they are made uſe of to get to windwar

I ſhall conclude with that moſt worthy obſervatio of the ſeaſon wherein the rains begin, which, on th Gold-coaſt, is about the 10th of April; and this ma be generally remarked, from thirteen degrees Nort to fifteen South latitude, that they follow the ſun wit in five or ſix degrees, and ſo proceed with him till h has touched the tropic, and returns to the like ſt tion again. This I ſhall illuſtrate by the following e ample; viz. Cape Corſo-caſtle lies in 4 d. 55 m. Nort About the 10th of April, the ſun has near 12 d. Nor declination. At that time the rains begin and contin with the inhabitants of that place, until he has p formed his courſe to the greateſt obliquity from off t equator, and returned to the like poſition South. T ſame I ſuppoſe may be obſerved and underſtood of ther places within the tropics.

The variation (of which, in the year 1680, I ma frequent obſervations) was 2 d. 14 m. Weſterly, an generally flows at the aforeſaid place, South Sou eaſt, and North North-weſt, upon the full and chan the water riſing upon Spring-tides about ſix or ſeven feet up and down.

*I remain, Sir,*

*Your humble Servant,*

J. G.

Thoſe cold winds, called Harmatans, are not at all nore extraordinary than the burning winds on the oaſt of Perſia, which are terrible to the laſt degree, and the months of June, July and Auguſt, render Gambroon the only port which the Perſians have on that de, uninhabitable. Theſe winds blow in a very narrow mpaſs, and are viſible, and therefore avoidable, which done by throwing one's ſelf flat on the ground till ey are paſt over. If a man is on horſeback when he eets them, he muſt diſmount, and turn his horſe's il to the wind, and then, lying down by him, he eſerves the beaſt's life and his own.

There was, in the year 1712, a very ſingular innce of the malignity of theſe winds. Two French ntlemen would needs travel, in the month of July, m Gambroon to Iſpahan, notwithſtanding all that chief of the Engliſh factory could ſay to diſſuade m, believing probably, that what he told them was ly the fables of the country, for which they paid rly. The general rule for travellers is, to ſet out ween three and four in the morning, and travel till e, which rule theſe French gentlemen obſerved; , being fatigued by their morning's journey, as ſoon hey came to a caravanſary (which are lodgings built very ſtage's end, a ſtage being about fifteen miles) y were diſpoſed to reſt, and ordered their ſervants ake their beds ready, (for even thoſe neceſſary furre travellers are obliged to carry along with them carriage-beaſts) directing them to call them when dinner was ready, and withall ordered a ſheet for each of them to be dipped in water, to lay over them to cool them. One of theſe hot blaſts unfortunately came whilſt the gentlemen ſlept, and had left the windows of the room open, and the wind blowing in at the windows, ſcorched them both to death on their beds, where the ſervants found them when dinner was ready, and, pulling off the ſheets, the ſkin, and ſome fleſh, came off with them.

It is certainly a great happineſs to our country, that we have none of thoſe dreadful winds: but this however need not reſtrain us from endeavouring to diſcover their cauſes, and the manner of their extraordinary operations, which might perhaps be of uſe in accounting for damps in mines and other places, which induced me to give them a place here, as matters that could not be unacceptable to the curious.

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